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ABSTRACT

The document summarizes research on the process of diffusing innovations in vocational education. The purpose was to: (1) determine if empirical dimensions of three conceptual domains (innovation, client, and strategy) exist; (2) if they exist, to identify them; (3) to describe them with empirical information; and (4) to relate the dimensions to perceived effectiveness of diffusion tactics. An interim report described the innovation and client domains; the final report identifies types of diffusion tactics and relates selected variables (types of diffusion tactics, types of clients, stages of adoption, and types of innovations) to the perceived effectiveness of these tactics. Stages of adoption are identified as awareness, interest, evaluation, and adoption. The most important finding of the study was a significant difference in the perceived effectiveness of diffusion tactics across all stages of adoption. The ratings for stage of adoption was different across all tactics. The interaction of these two variables was also significant. Individuals in the client clusters perceived tactic effectiveness differently. Respondents in different roles tended to perceive tactic effectiveness differently. These findings empirically document the need for differential use in educational change tactics for persons in different roles and for projects in different stages of adoption. (Author/AJ)

The Perceived Effectiveness of Innovation Diffusion Tactics

THE CENTER FOR VOCATIONAL EDUCATION
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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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Research and Development Series No. 99

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Research and Development Series No. 99

PERCEIVED EFFECTIVENESS OF INNOVATION DIFFUSION TACTICS

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Foreword

The research reported in this publication summarizes several months of research on the process of diffusing innovations in vocational education. These research findings on the perceived effectiveness of diffusion tactics are being used by developers at The Center for Vocational Education to construct materials for the formulation of effective diffusion strategies.

We appreciate very much the assistance we received from personnel in the Indiana, North Carolina, and Massachusetts State Departments of Education. Without their help in identifying school districts for collecting information, this study would not have been possible. Most important to this study were the teachers and administrators in school districts throughout these states who provided their perceptions of innovation diffusion tactics.

We wish to acknowledge the scholarly reviews of this publication by Dr. David P. Crandall, director of the Network of Innovative Schools, East Haverhill, Massachusetts and by Dr. Brandon Smith, director of the Minnesota Research Coordinating Unit, University of Minnesota.

In addition to the authors of the report, we extend appreciation to Joe Gross and John Howard, Jr. who participated in data collection and anlysis activities.

Robert E. Taylor
Director
The Center for Vocational Education

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Summary

The problem being attacked by this research study is the effective use of research and development products in education. Present practice indicates the need for empirical knowledge of the innovation diffusion process in order to formulate effective diffusion strategies. The primary objective of this study was to determine if certain educational change tactics were perceived to differ in their effectiveness for each of five stages of the adoption process.

The research design was similar to an incomplete, eight factor Analysis of Variance design with two of the factors as the dependent measures (tactic type and stage of adoption). Three variables were treated as blocking variables: state, location, and role. The design included measures of three other variables: client type, innovation type, and tactic sequence.

A fifty-item instrument was developed to identify underlying dimensions of clients as potential adopters of educational innovations. These dimensions were used in a cluster analysis to identify the client types. Three innovation types were contrived to represent different aspects of innovation characteristics. Six different sequences of tactics were randomly assigned to subjects. The tactic type examples were developed from concepts identified in previous research; the stages of the adoption process were taken from the literature.

Data were collected in three states from school districts identified with the assistance of state staff. The school districts ranged from small rural districts to metropolitan districts in large population centers. Respondents were stratified by role either as teacher, principal, or central administrator. More than 300 teachers and almost 200 administrators responded for an 88 percent return of useable questionnaires distributed.

The most important finding of the study was a significant difference in the perceived effectiveness of diffusion tactics ($p < .001$) across all stages of adoption. Similarly, the ratings for stage of adoption was significantly different across all tactics ($p < .001$). The interaction of these two variables also was significant. Individuals identified in the client clusters perceived tactic effectiveness differently ($p < .02$). Respondents in different roles tended to perceive tactic effectiveness differently ($p < .03$). These findings empirically document the need for differential use of educational change tactics for persons in different roles and for projects in different stages of adoption.

Chapter I

Introduction and Statement of Purpose

This report concludes a series of research investigations aimed at discovery of variables perceived to be effective in the diffusion of innovations. An interim report (Kester and Hull, 1973) contains empirical information on the conceptual dimensions associated with two of the four domains established as being influential in the diffusion process. These two domains describe characteristics of the innovation and the client (the person asked to use the innovation). A third domain, diffusion strategies and tactics, is described in this report. The fourth domain, characteristics of the innovation advocate, is not documented in this series of research studies because it was conceptualized late in the development of the program. The conceptual framework which guided the development of the research studies is discussed early in the next chapter of this report.

This report contains references to prior programmatic research. It utilizes the data presented in the interim report to establish relationships among variables studied in this report. A deliberate attempt is made to relate the three domains delineated to perceived effectiveness via the research design. Some of the data collected for the interim report is used to establish the dimensions of innovation characteristics. The evidence of validity and reliability for the client dimensions is taken from the interim report and reproduced in the appendices. In brief, both reports are integral to an understanding of the research reported within this publication.

The reader will find the report organized into four chapters. The first chapter delineates the statement of the problem and establishes the objectives for the study. The second chapter briefly reviews the conceptual framework and describes the methods used to collect, process, and analyze the data. The third chapter contains the findings of the study which are organized into discussions of (a) types of clients as innovation users, (b) the use of individual demographics in identifying client types, and (c) the effects of selected factors on perceived tactic effectiveness.

Statement of the Problem

The problem addressed by this research can be conceptualized as a discrepancy: research and development products should be used by the intended clients, but these products are not being used to any great or continuing extent. Evidences of this problem can be found in the time lag usually associated with the adoption of innovations and the ceremonial adoption that sometimes accompanies the "use" of innovations.

There are many examples of the time lag usually associated with adoption of educational innovations. Studies by Paul Mort and his associates at Columbia University many years ago established the time lag for innovation adoption at approximately fifty to sixty-five years for utilization of a single innovation. Miles (1964) estimated that it took fifteen years for 3 percent of the schools to adopt

the very practical notion of the kindergarten. State legislatures are finally authorizing state funds for the support of kindergarten 150 years after kindergarten was invented. A study completed by the National Commission on Technology, Automation, and Economic Progress (1966) looked at twenty innovations and the time lag between invention and adoption. Its report indicates progress in reducing the time lag associated with innovation diffusion: in the early twentieth century it took twenty-seven years; in post-World War I it took twenty-four years; and in post-World War II it took fourteen years for these inventions to be adopted. Despite this shortening of the time lag, a significant lapse of time occurs before the government can begin to recoup its investment in educational research and development products.

Secondly, there is the question of permanence of adoption after funding is withdrawn. In too many cases, only ceremonial adoption takes place. The innovation is implemented as long as "outside" money is supporting the innovation and supervision is maintained. As soon as either of these conditions is withdrawn, individuals and organizations revert to previous practices. Norman Hearn (1970), in a follow-up of Title III programs funded for the years 1965-66 with termination dates during 1968-69, reports continuation figures from a high of 85 percent to a low of around 60 percent, depending on how one interprets the responses. To insure adoption, it may be necessary to attach conditions to the acceptance of funds for innovations. A report by the Center for Educational Policy Research at Harvard University entitled "Education USA" (March 12, 1973) states, "It is unrealistic to expect to give free money and stimulate change." It would appear that resources such as dollars should be targeted for specific purposes. This suggests the need for strategies that make possible the effective utilization of research and development products.

Strategies that can bring about efficient and effective adoption need to be devised, since research and development products are not being accepted on their own merits. "Natural " acceptance of new ideas takes too long and may not be permanent. Therefore, intervention strategies are needed to emphasize characteristics of the product that have utility for potential users.

The general problem of educational innovation impact on the lives of students has been acknowledged by almost every administrative official in the Office of Education who has been associated with educational research and development:

Norman J. Boyan (1969, p. 16): "The existing gulf between the performers and real or potential users of educational R and D shows no signs of becoming smaller . . ."

James J. Gallagher (1970, p. 3): "There is a tremendous amount of energy that needs to be spent on the whole problem of how do you change, how do you get new ideas and new practices from one place to another . . ."

Sidney P. Marland (1971, p. 3): "More than one billion dollars in Federal research and development expenditures have produced so little in the way of tangible results in our schools . . ."

Thomas K. Glennan, Jr. (1972, p. 2): "Another problem is utilization of research—applicability. That's a problem we've had especially in the past ten years. Social scientists have been very good at doing good projects that work in one place . . ."

Persons responsible for the diffusion of exemplary products in education are hampered in their formulation of effective strategies because the knowledge of diffusion processes is not organized and delineated in a manner which makes it useful to diffusion agents. Existing knowledge is available at such a high level of conceptualization that it is diffficult to relate it to everyday problems in the formulation of diffusion strategies. What is needed is an empirical documentation of the factors influential in the innovation diffusion process and an explanation of interrelationships which affect acceptance of educational innovations.

Purpose of the Study

The purpose of this research was to (1) determine if empirical dimensions of the three conceptual domains exist; (2) if they exist, to identify them; (3) to describe them with empirical information; and (4) to relate the dimensions to perceived effectiveness of diffusion tactics. The first three purposes were directed toward the innovation and the client domains in the interim report (Kester and Hull, 1973). This report addresses the strategy domain and relates the earlier research to this domain.

The original study design called for relating the empirical dimensions of the three domains (innovation, client, and strategy) to observed adoption behavior. The design was modified due to funding and other constraints to include perceived effectiveness of diffusion tactics. The interim report referenced earlier described the innovation and client domains; this report identifies types of diffusion tactics and relates selected variables to the perceived effectiveness of these tactics.

Operational Hypotheses

1. The effectiveness of diffusion tactics will be perceived differentially by respondents with different demographics (membership in a state, geographic location, and role).

2. The effectiveness of diffusion tactics will be perceived differentially by the type of client being asked to accept an innovation.

3. The perceived effectiveness of diffusion tactics will differ from one tactic type to another.

4. The effectiveness of diffusion tactics will be perceived differentially by the stages of the adoption process.

5. The types of diffusion tactics will be perceived as differentially effective for different stages of the adoption process.

6. The effectiveness of diffusion tactics will not be perceived differentially by the sequence of tactic type.

7. The effectiveness of diffusion tactics will be perceived differentially by the types of innovations being considered.

Definition of Terms

ACCEPTANCE.	The use and approval of an innovation by an individual or organization.
ADOPTION.	A decision to make full use of a new idea as the best course of action available. (after Rogers, 1962)
ADVOCATE.	An individual or group of individuals who has accepted or has been assigned the responsibility of influencing the acceptance and/or use of a particular innovation or set of innovations.
CLIENT.	An individual or group of individuals who is the object of an advocate's attempt to influence their use of a particular innovation.
CONCEPTUAL FRAMEWORK.	A set of mutually consistent dimensions interrelated by logic, based in fact, and ordered at systematic levels of generality.
DIFFUSION.	The process through which a product is accepted over time by adopting units.
DIMENSION.	One of a set of coordinates containing sufficient subdimensions to distinguish one aspect of the innovation diffusion process from all others.
INNOVATION.	A research-based educational product perceived as new by a user.
PRODUCT.	Exportable information, methods, and/or materials which, when used as prescribed, will produce specific outcomes with designated clients.
STAGES OF THE ADOPTION PROCESS.	(1). Awareness: the individual is exposed to the innovation but lacks complete information about it. His interest is passive and he isn't motivated to seek further information about it. (2). Interest: the individual actively seeks additional information about the innovation; however, he has yet to judge its utility in relation to his own situation. (3) Evaluation: the individual mentally applies the innovation to his present and anticipated future situation. He then decides whether or not to try it. (4). Trial: the individual actually uses the innovation on a small scale in order to determine its utility in his own situation. (5). Adoption: the individual decides to use the innovation permanently on a full scale. (after Rogers, 1962)
STRATEGY.	A set of tactics used by an advocate to attain the use of an innovation by an identified client.
TACTIC.	A discrete action directed toward achievement of an incremental objective dictated by a given strategy.

Chapter II

Theoretical Framework and Methodology

The Theoretical Framework

The readers should have some knowledge of the basic paradigm used in conducting the research in order to understand the variables that influence the adoption of innovations. As mentioned in the first chapter, one activity of the initial programmatic research was the development of a conceptual schema derived from several broad characterizations of the diffusion process. This schema was not visualized as a model of the diffusion process but more or less a categorization schema that, over time, could provide the elements of a theory of diffusion. The reader is referred to CVE Research and Development Series No. 89, A Conceptual Framework of the Diffusion Process in Vocational and Technical Education, for a more detailed discussion of the framework.

A brief summary of the conceptual framework is provided here for the readers' convenience. After an extensive review of the diffusion process literature, the following conceptual domains were established: (1) the innovation being considered, (2) the client (i.e., individual, group, or organization) to which the innovation is directed, and (3) the strategy being used to effect the acceptance of the innovation. Each of these major domains have subcategories that further explain variables that have an effect on the acceptance of innovations.

The authors of the conceptual framework made two assumptions:

1. A wide variety of innovations, characteristics of adoption settings (individual-group, rural-urban, etc.), and diffusion tactics can be described by a single conceptual framework.

2. Consumers of innovations have the ability to reject as well as accept innovations. Even in highly structured bureaucratic organizations, employees find ways of subverting innovations that they perceive to be detrimental to their interests.

The innovation domain has two subcategories: the form (e.g., instructional materials, installable system, etc.) and perceived attributes (e.g., cost, relative advantage, compatibility with existing context, etc.).

The client (consumer) of the innovation can be identified as an individual, group, or organization. Some subcategories of this domain are the setting (e.g., size, location, socioeconomic background, etc.), the formal organization (e.g., span of control, complexity, standardization, etc.), the social organization (e.g., communication channels, leadership styles, group relations, etc.), and the individual (e.g., biographical demographics, attitudes, and behaviors).

The third domain, which completes the descriptive elements of the conceptual framework, is the strategy. This domain attempts to describe the types of actions or considerations the advocate

must take into account when initiating an intended change (innovation) and also the types of actions or considerations the client takes into account in responding to an advocate's strategy. Therefore, a more precise label for this domain of the conceptual framework would be the strategy-response. Although the subcategories of this domain are presented sequentially, this does not imply that they occur in that manner. There are several decisions which must be made in the formulation of a strategy. One decision is the target audience level of the strategy (e.g., individual, group, or organization). This decision would contain such issues as what "point of entry" is appropriate into an organization. The second decision is the selection of a communication mode (e.g., media, personal contact, or some combination). The third decision is the selection of a basic style or type of tactic to be used. The tactics used may be informative, persuasive, or coercive, depending upon the intent and judgment of the advocate or respondent. The fourth and final consideration of the strategy-response domain is the relationship that exists between the advocate and the client. Whether the advocate is considered a peer, superior, or subordinate of the client will influence the nature of the strategy that is employed. In addition, the relationship between an advocate and a client can be considered to have a certain intent (e.g., rejection, resistance, or acceptance), and state (e.g., consensus, cooperation, coalition, conflict, or flight).

This general paradigm of how one might look at the process of change in school settings acted as a guiding rationale for the identification of variables studied in this research. One of the primary aspects of the process of change has to do with the actions (tactics used) of those who are advocating an innovation and the responses of those who are the intended consumers of that change. The perceived effectiveness of innovation diffusion tactics was the primary focus of the study. Another interest investigated was whether different types of educational consumers differ in their views of the effectiveness of actions that advocates may use. Assuming that there are different stages in the process of responding to change (Rogers, 1962) another interest examined was whether these stages made a difference in the way consumers viewed the effectiveness of advocate actions. A final concern was whether different types of tactics are viewed differently depending on the type of innovation being suggested.

These interests stemmed from three factors. The dynamics of the strategy-response dimension. How clients view the actions of advocates is an obvious and logical aspect of that dynamic. Another factor that led to the exploration of the perceived effectiveness of advocate actions was the preliminary findings of the research (Kester and Hull, 1973). This research indicated that educational practitioners differed in the way they viewed various characteristics of innovations. It was logical to assume they also might view actions of advocates differently. A third more pragmatic reason for selecting this area of study was that the research program called for the development of an advocate's handbook or guide. Information on how potential consumers viewed the effectiveness of diffusion tactics was seen as critical to this handbook.

In order to accomplish the research it was necessary to operationally define four aspects of the general paradigm; (1) tactics or actions of advocates, (2) types of clients (educational practitioners), (3) stages of adoption, and (4) types of innovations. The following is a discussion of the theoretical derivation of those constructs.

Types of Diffusion Tactics

Chin and Benne (1969) describe three types of approaches used by individuals or groups to effect change in education: empirical-rational, normative-reeducative, and power-coercive.

Empirical-rational strategies are described as those actions which assume that consumers will follow their rational self-interest once it is made apparent to them. Normative-reeducative strategies differ from empirical-rational strategies in that they assume that it is necessary to appeal to and modify normative orientations such as attitudes, values, skills, and relationships in any attempts to cause clients to accept and use new ideas. Power-coercive strategies are defined as those which use the application of political or other types of power to force compliance with a particular change.

Kolter (1972) in a discussion of "the elements of social action" discussed change strategies in a manner quite similar to that of Chin and Benne. Kolter also looked at change strategies in terms of three categories. He suggested that change occurs according to coercion, persuasion, or education. Kolter's definitions of the coercive (power) and education (reeducative) strategies closely parallel those of Chin and Benne's power-coercive and normative-reeducative strategies. Kolter's definition of persuasive, however, is somewhat broader in scope than Chin and Benne's empirical-rational strategies. Persuasive strategies to Kolter, are those which attempt to induce the change of a particular behavior by identifying the object of change with the existing beliefs or values of those who are the intent of the change.

Guba (1968) and Sieber (1967), even prior to Chin and Benne or Kolter, had begun to deal with the problem of constructing a taxonomy of strategies for causing social and more specifically educational change. Guba suggested that strategies designed to gain the acceptance of innovations must consider five sets of factors. These five were: (1) diffusion techniques, (2) assumptions concerning the nature of the adopter, (3) assumptions concerning the end state in which one wishes to leave the adopter, (4) assumptions about the nature of the agency or mechanism carrying out the diffusion activity, and (5) assumptions concerning the substance of the invention. Although all of these are consistent with the overall model in which this study was developed, the first two categories are more specifically related to the purpose of the study, which was to determine the effectiveness of particular diffusion tactics.

Guba claimed that there were six basic diffusion techniques (tactics) or actions which could be used by change agents. These were; (1) telling, (2) showing, (3) helping, (4) involving, (5) training, and (6) intervening. Guba further noted that these tactics were arranged and employed on the basis of assumptions the change agent made about the individuals with whom he was dealing. He proposed seven assumptions that might be made: (a) that the client is a rational entity who acts on the basis of hard evidence and logic, (b) that the client is untrained and needs to be taught how to conform to the innovation, (c) that the client is motivated by psychological aspects and can be persuaded to use the innovation, (d) that the client is primarily concerned about the economic aspects of his environment and can be compensated or deprived to use the innovation, (e) that the client is politically motivated and can be influenced to accept a given change, (f) that the client is an employee of a bureaucratic system and can be compelled to accept change, or (g) that the client is a professional who can be obligated to use some new practice or procedure.

When we look at the three viewpoints (Chin and Benne, Kolter, and Guba) on strategies, two points emerge. One is that diffusion tactics can be categorized according to specific behavioral actions which can be performed by advocates (e.g., showing, telling, discussing and compelling). The second point is that diffusion tactics also can be categorized according to certain underlying assumptions which can be made about motivations of the clients. The conceptualization of tactics for this study was made on the basis of these two considerations.

The conceptualization of diffusion tactics for this study first consisted of seven tactic types that were organized according to three categories which describe the assumptions underlying the motivation of the clients. The tactic types were; (1) telling, (2) showing, (3) discussing, (4) influencing, (5) involving, (6) rewarding or punishing, and (7) mandating or ordering. The first three tactics of telling, showing, and discussing were considered as based on the assumption that the client needs information about the innovation. This can be provided through showing or demonstrating the actual innovation being suggested. A third way of informing is to have two-way discussions between the advocates and the clients concerning the basic aspects of the innovation. Tactics four (4) and five (5) were considered persuasive tactics because they were based on the intent to identify the innovation with the client's personal or professional values. The tactics of involving would be based on the assumption that clients need to become participants in the innovation so as to persuade them of the need for the change and their ability to carry out the expectations of that change. The third category used to organize the seven tactic types was that of power tactics. These tactics assume that the advocate has the ability to sanction the the actions of the client with whom he is working. If this is the case, then the advocate can influence the client by giving out or withholding various kinds of rewards or punishments which the clients perceive the advocates have. Another way the advocates can use their power is to simply mandate or order the change.

In sum, this double categorization schema provided the organizing rationale for the diffusion tactic items on the questionnaire in this study. The derivation of the fourteen diffusion tactic items is explained in the section under instrumentation and measurement later in this chapter.

Types of Clients

As mentioned in the initial discussion of the theoretical framework of this study, it was hypothesized that the way respondents' (potential clients for innovations) perceive their roles and responsibilities will have some effect on the way they view the effectiveness of diffusion tactics. This hypothesis was supported by previous research in the program which determined differences in the way educational practitioners perceived their roles and professional responsibilities. Information on the instrumentation for this prior research is contained in Appendix A.

The earlier research resulted in the identification of four underlying dimensions of what was labeled professional-organizational functioning. These dimensions were very interpretable and did correlate with other variables associated with the process of change (Kester and Hull, 1973 and Kester and Hull, 1974). Therefore this same basic constructual framework and the corresponding instrument was used again in this study to identify client types. The analysis used to determine the types, however, was different than the original study. See the methodology section for information on the client types.

Stages of Adoption

An important aspect of the strategy domain of the conceptual framework was that of stages of adoption. Rogers' (1962) conceptualization of the stages of adoption individuals go through in the process of accepting an innovation stands as a landmark in the literature. The five stages were defined in the following manner. Awareness was the stage at which the client is exposed to the

innovation but lacks complete information about it. His interest is passive, and he doesn't necessarily seek information about it. Interest is the stage in which the client actively seeks additional information about the innovation; however, he has to judge its utility in relation to his own situation. Evaluation then is the stage at which the client mentally applies the innovation to his present and anticipated future situation. He then decides whether or not to try it. If he decides to try the innovation he enters a trial phase in which he uses the innovation usually on a small scale in order to determine its practical utility. Adoption, the final phase in the process of acceptance, is that stage when he decides to use and incorporate all or parts of the innovation for an extended time.

Types of Innovations

Along with types of diffusion tactics, types of consumers, and stages of adoption, the type of innovation being suggested to the consumers was hypothesized as having an influence on the effectiveness of tactics. Therefore it was necessary to conceptualize differences in types of innovations. Previous work in the overall programmatic research was again drawn upon in this area (Hull and Wells, 1972 and Hull and Kester, 1974). In this previous research, dimensions of innovation attributes which were considered to be important to clients were identified. In particular, six dimensions were defined in that research. A discussion of how these dimensions were used in the process of differentiating innovations in this study is found later in this chapter under the heading "Development of the Innovation Descriptions." A discussion of the derivation of the conceptualizations is contained in the cited research reports.

There was a considerable amount of literature dealing with various aspects of innovations which may have an effect on acceptance. A two-stage research process was carried out to define the basic underlying dimensions of innovation characteristics which were perceived to be important to consumers. The following definitions of these dimensions is provided here for the reader's convenience. For a more elaborate explanation the reader is referred to the Kester and Hull, 1973 report.

The first factor was labeled "Student-User Concern Orientation." This had to do with whether the content and/or purpose of the innovation is perceived as relevant and appropriate for the needs of the students and the teachers or administrators who would be using it.

The second factor was labeled "Additional Resource Requirements." This is associated with characteristics of the innovation such as the need for people, time and money beyond that which was presently available or able to be reallocated.

The third factor was labeled "Organization Operation." An advocate can be assured that one aspect of the innovation which will be in the minds of the user will be the extent to which the innovation requires the reallocation of time, personnel, and money, or involves changes in policy, class schedules, or other operational aspects of the school.

The fourth factor was labeled "Organized Resistance." One critical but somewhat elusive aspect of innovations identified here is the degree to which values associated with the innovations are consistent with those of certain organized segments of the school community.

The fifth factor was labeled "Warantee Evidence." When an innovation is being introduced into a given setting, it is measured by a number of criteria such as; testing data, having a guarantee

of success, and demonstrated advantage over other similar innovations. In addition, the credibility of the developer and/or the advocates sometimes comes into play.

These five factors of innovation characteristics critical to successful use were reduced to five dimensions as noted later in this report. Analyses of the data after the interim report was published indicated the five dimensions to be more appropriate for innovations diffused into local education agencies.

Summary of the Conceptual Framework

In summary, the conceptual framework was based on the idea that in every situation designed to influence educational practitioners to consider and hopefully use new ideas or practices there are several domains. These domains are: an individual or group suggesting or encouraging the acceptance of an innovation (advocates), the individual or group being called upon to change or explore the need for change (clients), and the suggested change itself (the innovation). This particular study focused on the perceived effectiveness of innovation diffusion tactics. The respondents were potential users (clients) of educational innovations Therefore, the conceptual framework of this study was used to clarify and select categories of variables which are likely to influence the user of an innovation. These variables were: types of diffusion tactics, types of clients, stages of adoption, and types of innovations.

Instrumentation and Measurement

The instrumentation for this study was developed over a period of about four months with rather intensive interactions with other researchers and professionals in the field to determine what tactics were being used to diffuse innovations. The authors drew on past reports in the program to generate tactic items and refine the data collection instrument. Figure 1 contains a flow chart of activities which resulted in the development and use of the data collection instrument. In a very real sense, the research findings contained in this report represent a culmination of programmatic research activites. These findings will be used in the development of a handbook to assist project directors and other advocates of career education in the formulation of innovation diffusion strategies.

Development of the Items

Development of the Professional Opinion Survey: The Professional Opinion Survey was a set of items which were developed for a previous aspect of the programmatic effort to identify some of the underlying dimensions associated with the acceptance of innovations by clients. The process used for the development of the items in the instrument is explained in Kester and Hull, 1973. A duplication of that section of the report is provided for the reader's convenience in Appendix F.

Development of the Innovation Descriptions: The concept of innovation types was operationalized by describing innovations. The innovations were described in terms of the underlying dimensions (factors) identified by earlier research. These factors are listed in Table 1 with the frequency ratings for each contrived innovative description. These descriptions served as a stimulus to the

Figure 1

Flow Chart of Activities Described in the Report

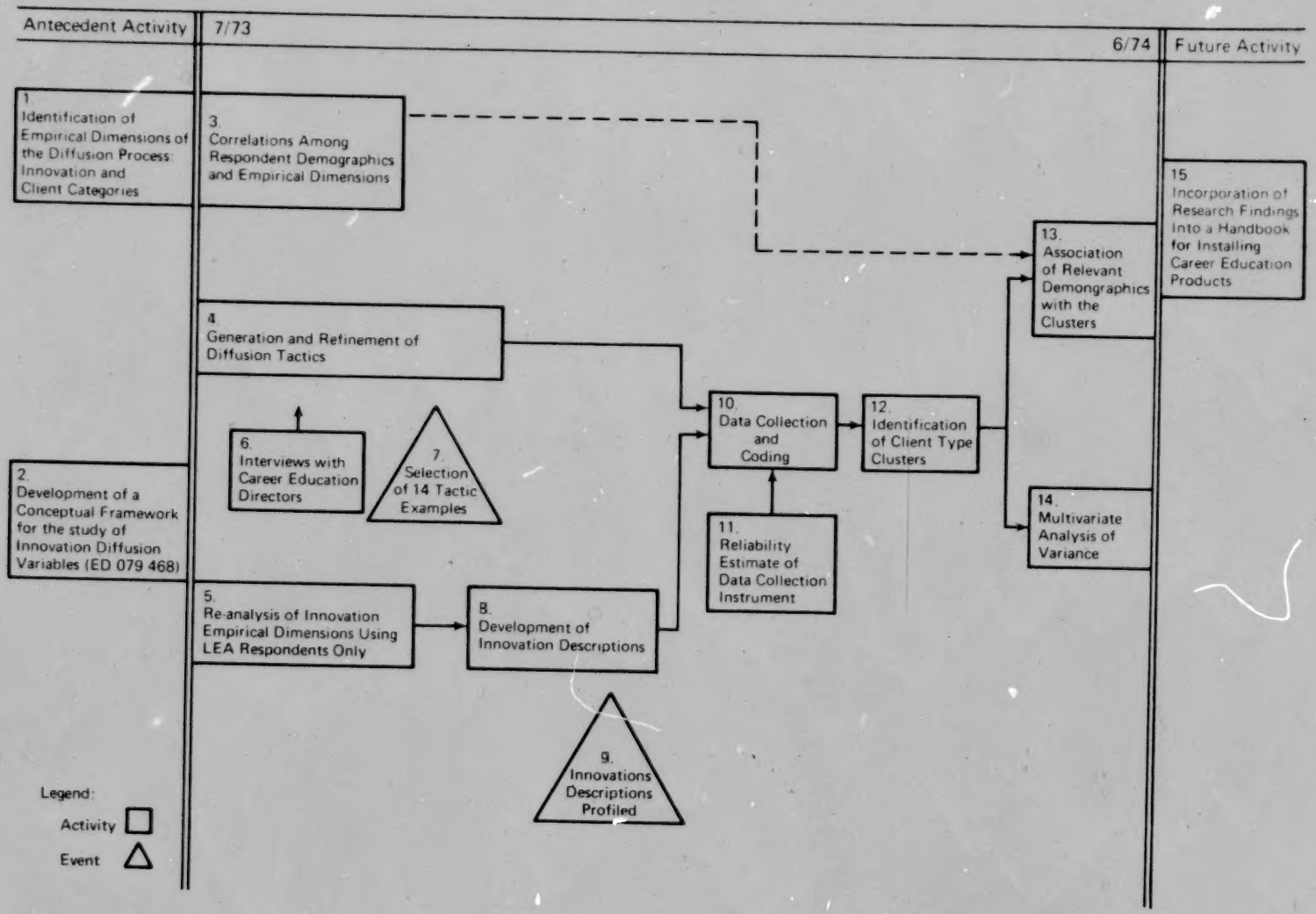
Antecedent Activity
7/73
6/74
Future Activity
1. Identification of Empirical Dimensions of the Diffusion Process: Innovation and Client Categories
2. Development of a Conceptual Framework for the study of Innovation Diffusion Variables (ED 079 468)
3. Correlations Among Respondent Demographics and Empirical Dimensions
4. Generation and Refinement of Diffusion Tactics
5. Re-analysis of Innovation Empirical Dimensions Using LEA Respondents Only
6. Interviews with Career Education Directors
7. Selection of 14 Tactic Examples
8. Development of Innovation Descriptions
9. Innovations Descriptions Profiled
10. Data Collection and Coding
11. Reliability Estimate of Data Collection Instrument
12. Identification of Client Type Clusters
13. Association of Relevant Demongraphics with the Clusters
14. Multivariate Analysis of Variance
15. Incorporation of Research Findings Into a Handbook for Installing Career Education Products
Legend:
Activity
Event

Table 1

Frequency of High or Low Ratings of Innovation Descriptions
On Five Dimensions of Characteristics

Innovation Characteristic Dimension	Description No. 1		Description No. 2		Description No. 3	
	High	Low	High	Low	High	Low
Student-User Concern	17[a]	0	10	7[a]	14[a]	3
Additional Resource Requirements	12	5[a]	13[a]	4	10	7[a]
Organization Operation	12[a]	5	7	10[a]	10	7[a]
Organized Resistance	5[a]	12	9	8[a]	8[a]	9
Warantee Evidence	9[a]	8	3	14[a]	8	9[a]

[a]Intended rating of a contrived innovation description on a dimension.

respondent as each tactic was rated for each stage of adoption. See Appendix A for a copy of the innovation descriptions.

These contrived examples of innovations were written to conform to predetermined levels of dimensions of characteristics. For example, description number one was written to relate rather directly to student needs. It was designed to be rated high on the student-user concern dimension. Innovation description number two was written to be rated low on the student-user concern dimension.

As a check on the ability of the developers to write descriptions of innovations to conform to the desired levels on the innovation characteristics dimensions, seventeen career education project directors in Ohio, North Carolina, and Massachusetts were asked to rate each innovation description on each dimension. Since the descriptions were career education innovations, career education project directors were selected. All but one of these individuals were at the local level since the primary population for the research is local education agency personnel.

The five underlying dimensions of innovation characteristics used in the rating of the descriptions was determined from data collected during 1972 as reported in the Kester and Hull interim report (1973). However, only the responses from local educators were used since the local education agency was to be the target for the 1973 data collection effort. This reduced the number of respondents from 243 to 157. The five factors (dimensions) are listed in Appendix B. They differ from the dimensions reported in the interim report in that one factor was dropped during the re-analysis of the data. The items on this factor (labeled as "credibility") did not load in a manner which was as readily interpreted as the six factor solution contained in the interim report.

The five Innovation Characteristic Dimensions are listed in Table 1. Notice the ratings of the expert judges (the career education project directors who rated each innovation description on each dimension) did not agree very well with the levels of each dimension intended to be present in each innovation description. The majority of the judges were in agreement with the writers of the innovation descriptions in only nine of the fifteen cells. This result of the rating process reflects the ambiguity experienced by the researchers as they tried to describe aspects of a career education product consistent with a "high" or "low" rating on the dimensions. Although the dimensions are uni-dimensional factors, they represent several innovation characteristics in relation to each other. Such factors are difficult to interpret in examples of realistic product descriptions.

Another problem associated with the interpretation of the innovation characteristic dimensions was the inability of the researchers to replicate the findings on a different sample of the population. It was convenient to collect data for the purpose of replicating the factor analysis of the innovation characteristic dimensions at the same time respondents were being asked to classify examples of diffusion tactics into the seven categories. For more information on this sample of respondents see the discussion under the heading "Development of the Tactic Examples." The Diffusion Tactics Development Survey listed in Appendix A was the instrument used to collect data for the factor analysis replication. The questions were identical to the ones used in the 1972 data collection.

The factor analysis performed on the fifty item data set was identical to the methods used on the 1972 data. The crossproducts orthogonally rotated five factor solution yielded factor

loadings which were quite different than the ones which were generated for the 1972 data. For example, the first factor for the re-analysis of the 1972 data illustrated an overriding concern for student use of the innovation. The first factor in the 1974 data reflects concern that the innovation may meet organized resistance in the school setting. See Appendix B for the two sets of five factor solutions.

The differences which are apparent in the factors generated from the two data sets could be due to a number of reasons. The 1972 data were drawn from a much larger number of schools and from a wider geographic section of the country than the 1974 sample. Teacher respondents were randomly selected in the 1972 sample; they were hand-picked from those available in three to four school districts in each of three states for the 1974 sample. Either the difference in procedures for selecting the sample resulted in different responses or something in the administration of the instrument affected their responses. Respondents in the 1974 data collection activities completed rather routine tasks in classifying innovation installation tactics prior to completing the innovations characteristics section of the instrument. This may have influenced their reactions. The 1974 respondents may, in fact, have been more homogeneous in outlook since they were selected by their school administrators to participate. This may have reduced the variance in responses and resulted in loadings on factors different from those on the 1972 data set. In any event, the reader must be cautious in interpreting the factor loadings as valid and stable for local school personnel perceptions.

Development and Refinement of the Diffusion Tactics: The genesis of many of the diffusion tactics came from literature reviewed for the development of the conceptual framework, an antecedent activity to this research study. Particular articles were reread and used in the conceptualization of an initial list of ninety diffusion tactics. Papers by Egon Guba and Henry Brickell (1974) were commissioned by The Center for Vocational Education on procedures and strategies for diffusion of educational innovations. An article by Guba (1968) and the chapter by Chin and Benne (1969) were particularly useful in evolving a structure for classifying examples of diffusion tactics.

The initial list of ninety diffusion tactics was reviewed by staff at The Center for Vocational Education and revised by the authors in the spring of 1973. An attempt was made to write diffusion tactics at the same level of specificity. Overlap from one tactic to another was eliminated, reducing the list to thirty examples of diffusion tactics.

The list of thirty tactic examples was taken to eight Ohio career education project directors in local education agencies for their review and suggested revisions. They added suggestions which, when rewritten, resulted in a list of fifty tactic examples. The format for the next data collection instrument was tried out with the local education agency personnel at this time since it was convenient and they were typical of the type of persons who would be asked to respond to the next instrument.

The fifty item diffusion tactic instrument was reviewed by twelve CVE staff members and revision was made in the item statements and instrument format. This fifty item instrument, see Appendix A, was used to categorize the tactic examples into types. The subjects in this pilot test expressed frustration in their attempt to classify a tactic example as a "telling," "showing," or other type of tactic. This was noted and some of the tactic examples were rewritten to make them conform more clearly to types of tactics inherent in the Guba/Chin and Benne synthesized classification schema. The reviewers pointed out that the nine categories in this version of the instrument do not

represent a continuum. Therefore, some of the categories were combined to more nearly represent ordered types of tactics from informative types (tell, show, discuss) and persuasive types (influence, involve) to coercive types (offer a reward or punishment, mandate or order). The underlying continuum in this sequence is the degree of freedom experienced by the individual who is being asked to use an innovation to accept or reject it as a consequence of his or her own free will. The development of this instrument set the stage for the categorization of the tactic examples into one of the seven types.

Validity of the Instrument

The categorization of the fifty diffusion tactics into one of the seven type categories forms the basis for validity claims for this instrument. This classification was necessary in order to interpret the meaning of the perceived effectiveness ratings given the tactic examples by a later set of respondents.[1]

The samples of respondents used to validate the tactic examples as representative of the seven type categories were located in three states: one in the northeast, one in the southeast, and the other in the midwest. Respondents were stratified into urban, suburban, and rural school districts. The rural school district in one state failed to respond to our request. Researchers attempted to obtain equal numbers of responses from administrators (principals and central office staff) and high school teachers. No attempt was made to include or exclude vocational teachers. Appendix C contains an array of the respondents by state and location. No attempt was made to record the percent return of useable questionnaires since the sample was drawn from available personnel in three to four school districts per state. In most cases, the state staff recommended the school district, the central administrator recommended the school, and the principal selected teachers for the data collection activity. Administrators in the same school districts were used as respondents.

The classifications from the 126 respondents are summarized in Appendix D. A chi square test for random distribution was performed for each tactic across all categories. In no case was the distribution random. This satisfied the first criterion in the selection of a tactic example, non-random distribution across tactic type categories. The second criterion for the selection of tactic type examples was the use of the tactic example which was classified most frequently for a type category. Appendix D indicates the tactic examples used in the final instrument with a circled letter. In all cases these examples were the ones with the highest frequency for a particular type category.

The authors believe the use of such examples tends to allow the drawing of conclusions about the seven tactic type categories. No empirical data is presented to suggest any relationship between the type categories and the broader assertions of informative, persuasive, and coercive labels for the categories and tactic examples. The assumption of a particular tactic example as "coercive" must rest upon the strength of logic and face validity.

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[1] The reader is reminded of the need to keep the time frame of the study in mind as these data sets are discussed: (1) data displayed in the interim report were collected in 1972, (2) data for the validation of the instrument and confirmation of the innovation characteristic dimensions were collected in September 1973 and the final data set evaluating the effectiveness of the tactic examples were collected in November and December of 1973.

The fourteen tactic examples selected for the final data collection instrument were rated for perceived effectiveness at each of five stages of adoption. These stages of adoption were taken directly from the work of Rogers (1962). They have been used in a number of diffusion studies with some success. They were included as a means of further specifying the utility of the diffusion tactic examples at specific points in time as innovations are diffused to potential user audiences.

Reliability of the Instrument

One assumption made by the developers of the instrument was the probability of differential effectiveness of diffusion tactics for each stage of the adoption process. It was logical, therefore, to estimate reliability on the tactic examples and the stages of adoption only. One can assume the reliability for the tactic type (which estimates the reliability for the combined set of examples) would be an average of the reliabilities reported for the examples of the tactic type. A test-retest form of reliability was used since each estimate of tactic effectiveness for each stage of adoption was an independent judgment from all other estimates of tactic effectiveness. The internal consistency of the items in the tactics questionnaire was not a consideration.

The reliability coefficients for the tactic examples ranged from a low of .33 for an example of a mandate or order tactic to a high of .74 for a discussion tactic. The high reliability coefficient for stage of adoption was .69 at the awareness stage and .47 for the evaluation stage. Appendix table E 1 contains the reliability coefficients for the diffusion tactic examples and the stages of adoption. The coefficients range from a low of .33 for a mandate or order tactic to a high of .74 for a discuss tactic. The stages of adoption ranged from a low of .47 to a high of .69. These are very reasonable reliabilities considering the large number of factors influencing the tactics effectiveness ratings.

Scoring the Dependent Variables

The dependent variables (perceived effectiveness of the innovation diffusion tactic) was derived from a series of responses provided by each subject. More specifically, the data collection instrument required the subjects to rate two examples of each of seven innovation diffusion tactic types on a one to five scale (not effective, slightly effective, moderately effective, very effective, and extremely effective for each of five stages of the adoption process. See Figure 2 for a hypothetical illustration of the response format.[2] Subjects responded to two examples of each type of tactic, thus ten responses or ratings of from one to five were added together to form a tactic type score. Likewise, fourteen responses were added together to arrive at a score for each stage of adoption. Another composite score that was generated was the sum of all tactic effectiveness scores. This was formed using all seventy of the dependent variables. Combining subject responses in this manner yielded the following potential ranges for the composite scores that were employed in the actual data analyses:

Seven diffusion tactic type scores	10 to 50 points
Five stages of adoption	14 to 70 points
One sum	70 to 350 points.

Figure 3 illustrates the use of these scores to test the variables in the study.

[2] It is hypothetical because the tactics were presented as examples of the categories in one of six random orders; the tactics were not classified by categories in the questionnaire.

Figure 2

Data Source
For Dependent Measure:
Tactic Effectiveness[a]

Tactic Type	Stages of Adoption: Awareness	Interest	Evaluation	Trial	Adoption	Row Totals
Tell	1	2	3	4	5	
Show	6	7	8	9	10	
Discuss	11	12	13	14	15	
Influence	16	17	18	19	20	
Involve	21	22	23	24	25	
Reward/ Punish	26	27	28	29	30	
Mandate/ Order	31	32	33	34	35	
Colums totals						SUM

[a]Each subject responded to each cell in the matrix. See Appendix A for a copy of the questionnaire which lists two tactics for each tactic type.

Figure 3

Dependent Measures Used to Test Main Effects in the Design[a]

Independent Variables	Dependent Variables: Per Stage of Adoption (35 Variables)	Adoption Stages (5 Variables)	Tactics (7 Variables)	Sum of All Tactics and Stages (1 Variable)
Between Subjects				
State	—			X
Location				X
Role				X
Innovation Type				X
Tactic Sequence				X
Client Type				X
Within Subjects Repeated Measures				
Tactic Type			X	
Stage of Adoption		X		
Tactics X Stage of Adoption	X			

[a]See Figure 2 for an illustration of the data source used to generate the dependent measures.

The tables in this report show the average sum assigned to a tactic type, stage of adoption or the combination. The reader should remember that the subjects rated two examples for each type of tactic. This is the reason the score means in the tables usually exceed the number of points available for a single tactic example.

Data Collection Procedures

Data were collected from two different samples of the target population: one sample of 126 respondents was obtained in September 1973; the other sample of 511 respondents were surveyed in November and December 1973.[3] The Figure 1 flow chart of program activities shows the relationships among the activities conducted in this research study.

The procedure followed for the identification and selection of a school district for participation in the study was to contact the State Director of Vocational Education in the state and explain the purpose of the research. The data requirements were described and operational definitions provided for the categorization of urban, suburban, and rural districts. Four states were used for the data collection activities: Indiana, Massachusetts, North Carolina, and Ohio. Most of the data were collected in Indiana and North Carolina. But no claims are made for the representativeness of the school districts in a state or for the schools in a district. Only the teachers in the last sample were randomly selected. Then the superintendents of the districts were contacted for permission to survey administrators and teachers. The research team experienced only one turn-down due to the groundwork which had been laid by the state department staff. The superintendent or his representative identified schools which were asked to participate in the study.

The target population for the study included teachers and administrators in high schools (grades 9-12) who were part of the school districts selected by state officials and the researchers. In the case of the September data collection, the sample was one of convenience. Teachers and administrators were asked to respond to the tactics development questionnaire on the basis of their availability. Three to four school districts were contacted in each of three states for this sample. These data from the 126 respondents were used as a basis for selecting the examples of the diffusion tactic types and to confirm the underlying dimensions of the innovation characteristics domain. See the tactics development questionnaire in Appendix A for more information.

Schools were identified with the help of state officials for the November and December data collection. This was similar for the September data collection, but the end of the year sample used a different procedure for selecting teachers for the study. Lists of school instructional staff with at least one year of teaching experience were obtained. Teachers were selected from the list using a table of random numbers. The reader can be somewhat confident that the results of the study can be applied to teachers in the school system under study. However, administrators were selected as they became available for the November and December data collection. This was necessary because the smaller districts had to use almost all of the central office staff as well as principals in order to obtain the desired number of administrator responses. An attempt was made to obtain equal numbers of responses from teachers and administrators in the local education agencies.

Table 2 shows the number of teachers and administrators responding to the tactic effectiveness survey. The reader will note the large number of urban teacher responses as compared to responses

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[3]Periodically in this report reference is made to a 1972 data collection survey which was part of this research program. The results and procedures of this survey are reported in an interim report, Kester and Hull (1973).

Table 2

Number of Teachers and Administrators by Location Responding to the Tactic Effectiveness Survey, November, December, 1973

	Urban	Suburban	Rural	Totals
Teacher	173	81	68	322
Principal	34	36	23	93
Central Administrator	46	37	13	96
Totals	253	154	104	511

Table 3

Number of Questionnaires Distributed and Returned

State Number	Distributed	Returned	Useable
1	269	236	231
2	182	176	174
3	145	112	106
Total	596	524	511

from suburban and rural sites. This was due to the procedures used to estimate the reliability of the data collection instrument. The teachers in two urban schools in one state were asked to respond to the data collection instrument twice with approximately six weeks intervening between data collections in the winter of 1974. The 106 useable questionnaires containing the initial data collected were combined with data collected from the other two states. Useable responses from the other two states numbered 231 and 174 respectively.

Table 3 shows a percent return of useable questionnaires of 85.74. If a questionnaire contained more than 10 percent missing data, it was not used. The 106 useable responses from state three refers to the first administration of the questionnaire only. Only ninety-five questionnaires were returned in the second administration of the questionnaire which could be identified with a subject's previous response. These data were used for estimating test-retest reliability.

One additional data sampling exercise was necessary in order to complete the data analysis for this study. The storage capacity in the computer used to process these data as well as time constraints was sufficiently limited to necessitate a sampling of the data in order to establish clusters of client types. Therefore, a 20 percent stratified random sample was drawn from the total sample of 511 subjects as a basis for identifying client types. The sample was stratified on the following variables: state, location, and role. Table C 2 in Appendix C contains the frequencies for these cells.

Previously, the responses to the fifty item POII had been factor analyzed into a five factor solution with factor scores for each individual respondent. These factor scores were used to assess whether the sample of 102 subjects and the remaining 409 subjects could be described as coming from the same basic population. The F value of 0.67 for the resultant test was not significant at the .05 level. Therefore, the client-type clusters derived using the 20 percent-sample were used as the basis for categorizing the entire sample of 511 subjects.

Design of the Study

The basic design which was employed was similar to the multi-factor experiment illustrated in Winer, (1962) pp. 302-307 except that not all cells of the factorial design were represented, e.g., there were some vacant cells. As a result, the design used can best be described as an incomplete, eight factor design with two of the factors (stage of adoption and tactic type) being treated as dependent measures. Figure 4 illustrates the design.

An inspection of Figure 4 shows six independent variables: state, location, role, client type, innovation type, and tactic sequence. The symbol (R) indicates random assignment of innovation type and tactic sequence to subjects. The tactic sequence variable was included in an attempt to balance any effect which may have been due to the order in which the tactics were presented. Such a complex design was thought to be necessary in order to account for the many sources of variance that could affect the formulation of an innovation diffusion strategy.

During the implementation of this design, subjects were stratified according to state, location, and role in order to control for possible sources of variance suggested by the rationale for the formulation of a diffusion strategy. For example, the use of the more coercive type tactics may be more consistent with school variance in urban areas than in rural areas. Data were collected in three states in urban, suburban, and rural locations. The three levels of role were teacher, principal, and central

administrator. See the data collection procedures in this chapter for more information on the implementation of this design.

Data were collected in three different states, not so much for the purpose of generalizing the results in a statistical sense, but rather, for the purpose of determining if variance assigned to states would be significant, since the states were located in different parts of the country. The use of the location variable followed the same logic. Sites were deliberately selected to represent three levels of that variable: urban, suburban, and rural. This selection was made by the program staff working in consort with personnel in the state education agencies.

The role variable was important to examine because it reflects structural relationships internal to the organization of the school district. Role perceptions usually reflect the personality of the incumbent as well as his or her position description. Personality aspects of role are considered in the Professional-Organizational Image Inventory (POII), the second half of the questionnaire; this fifty-item index was used as a basis for forming the client type clusters, another independent variable in the design. Personality characteristics were assumed to be distributed at random across the levels of role as it was used in the design to select teachers, principals, and central administrators as subjects. The teachers were randomly selected from staff roles of schools which were identified as the data collection site by the chief administrator in the district or by his assistant. Only teachers with at least one year of experience in the school were nominated for participation in the study. This was done to encourage somewhat consistent influences on respondents. In most cases, the administrators from the districts and schools selected participated in the study. See the section on Data Collection Procedures for details on the sampling techniques. Assuming a random effect of personality, the role variable could be conceived as primarily an indication of constraints and other influences on the individual's position description.

Three descriptions of innovation types were used to stimulate evaluations of tactic effectiveness. It was believed the description of an innovation would make the rating procedure more tangible and realistic. The descriptions were developed independent of the subjects who rated the effectiveness of the tactics. The descriptions were based on previous research in the program. Each description contained different combinations of factors which influence the ease with which an innovation may be installed. See the Instrumentation and Measurement section of this report for more information on the development of the innovation type stimulus problem.

The seven client-type clusters were identified in a post-hoc factor analysis of the POII. This analysis was based on the following hypothesis: If individuals could be assigned to a cluster which contributed to an explanation of a significant amount of variation in the study, then change agents could use characteristics of cluster membership to anticipate behaviors likely to occur when such individuals are asked to accept an innovation.

It was necessary for membership in these clusters to be identifiable. To achieve this objective, sixteen of the biographics in the questionnaire (Appendix A) were used as a basis to discriminate among the clusters. The relative value of each biographic for identifying membership in clusters was assessed.

The investigation of tactic type by stage of adoption was necessary if the study was to pinpoint tactic effectiveness specific to a type of tactic at a particular stage of adoption. This rationale assumes

a certain linearity in the adoption process perhaps best explained by the Guba (1965) linear model of the change process. The five stages of adoption came directly from the work of Everett Rogers (1962). This conceptualization has persisted among change process researchers and seems to be representative of the way people think about innovation adoption. Note, however, it may not be an accurate reflection of the way change actually occurs in an adoption setting.

The tactic types were developed by program staff leaning heavily on the work of Guba (1974), Brickell (1974), and Chin (1969). Two examples of each of the following seven tactic types were presented to the subjects: tell, show, discuss, influence, involve, reward/punish, and mandate/order. See the Instrumentation and Measurement section of the report for more information on the generation of the examples used with these tactic types.

Limitations of the Study

The findings in this study should be viewed as preliminary and tentative for several reasons. This study was designed as a rather complex investigation into some of the underlying dimensions of a previously conceptualized innovation diffusion process. These dimensions were specified from factor analyses. The factor analyses of innovation characteristics was undertaken on two separate samples; the results were only roughly comparable. No attempt was made to replicate the factor structure of the client domain.

The reader should keep in mind the perceptual nature of the data. The respondent's views are likely to change from time to time and from place to place. The test-retest reliability coefficients of the diffusion tactic effectiveness instrument ranged from .33 to .74 with the bulk of the correlations falling in the upper .40's and .50's. The reliability of the perceived tactic effectiveness should be considered good considering the number of unknowns present in the diffusion situation which was presented to the respondents.

An effort was made to write tactic examples at similar levels of generality. Much improvement was made in this direction during the course of the research project, but the reader has but to review the list of tactics to note the varying levels of specifity of the statements. The authors do not know the effect of these different degrees of specifity on the ratings of tactic effectiveness given by the respondents.

Finally, the examples of tactics used as a basis for rating the effectiveness of the diffusion tactic types were not exhaustive. Thus, if different exampies had been used the results could have been different. Despite these limitations, the authors believe the data contained within the report represent one of the few attempts to relate the effectiveness of diffusion tactics to a number of variables believed to be relevant to the formulation of innovation diffusion strategies.

Data Analysis

Sequence of Activities

Data in this research report have been taken from three data collections: (1) a survey conducted in 1972, (2) a limited survey in September 1973 to establish the validity of the primary

survey instrument, and (3) the administration of this primary instrument in a three-state setting, November 1973. See Figure 1 for a flow chart of these activities. The correlations reported from the 1972 data base were used to select relevant demographics for discriminating among the client type clusters.

The final selection of the fourteen examples of diffusion tactics which were used in the final data collection instrument was the result of several revision steps described earlier in this chapter. The Professional Opinion Survey items used in the final data collection instrument were taken directly from instruments developed earlier in the program.

Data for estimating the reliability of the final questionnaire were collected concurrent with the final data collection activities. Once the data were coded, the analysis of the tactics survey data progressed along several directions. First, the responses to the Professional Opinion Survey (see the questionnaire in Appendix A) were factor analyzed via a standard principal component procedure. The unrotated factor set was interpreted to determine the number of factors appropriate for a varimax rotation. This was examined to determine the optimum amount of variance accounted for while maintaining ease of interpretation. In this manner, a final set of factors was established with factor scores for each individual being generated.

Subsequently, the factor scores were used as a basis for clustering respondents into client types. The basic design in Overall and Klett's *Applied Multivariate Analysis*, 1972, (pp. 192-194) was used to develop the computer program for this clustering process. The resultant analysis assigned each subject to one of seven clusters.

After each subject had been coded with a cluster membership, a multiple discriminate analysis was conducted to determine which biographics (on the last page of the questionnaire) were associated with membership in one of the derived client type clusters. This last step was important since change agents need readily available cues to associate with any perceived innovation diffusion tactic effectiveness. This information becomes important to change advocates who are formulating installation strategies on an incremental basis.

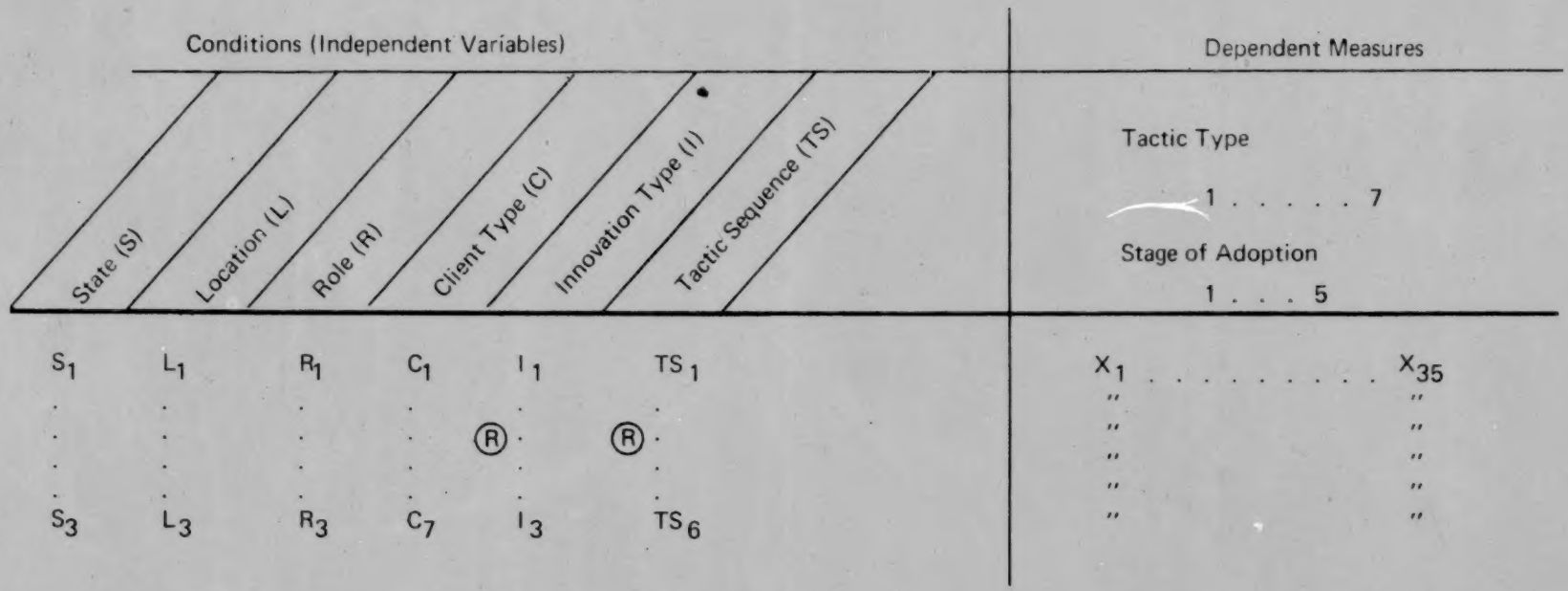
A multivariate analysis of variance was conducted to determine the effect of eight variables, as represented in the design illustration in Figure 4, on the perceived effectiveness of innovation diffusion tactics. This was accomplished after the client type clusters were identified since this variable was included in the design. This design allowed the researchers to study each of the eight variables in a manner which allowed the maximum amount of variance to be assigned to tactic type and stage of adoption, the two variables most likely to be subject to manipulation in the formulation of innovation diffusion strategies.

Identification of the Client-Type Clusters

In this study of the effectiveness of tactics, the influence of role perception was a major area of investigation. That is, would educational practitioners, who differ in perceptions of their organizational and professional role responsibilities, differ in their views of the effectiveness of tactics as well? In order to answer this question, it was first necessary to determine if identifiable and meaningfully different classifications of the respondents could be determined. A previously developed

Figure 4

Schematic of the Eight Factor Design



questionnaire consisting of fifty items (Kester and Hull, 1973) measured how respondents perceived their actions and attitudes with respect to their role as a professional and an employee of an organization. The fifth items can be reviewed in Appendix A in the section entitled "Professional Opinion Survey."

The construct of professional-organizational orientation was assumed to be multidimensional. Therefore the data was factor analyzed employing a principal components solution on the covariance matrix. Assuming that the variables were reasonably stable, estimated communalities were used in the diagonals.

It was hypothesized that there would be no more than six meaningful factors. This estimation was based on previous experience with the questionnaire (Kester and Hull, 1973). A varimax rotation of the factors was used. Sets of six, five, four, and three factors were rotated. On the basis of the Eigenvalues, (See Appendix E 2), it was quite clear that five major factors existed. After reviewing the content of the six, five, four, and three factor rotations, the same conclusion was reached. Therefore the five factor solution was chosen as the best representation of a parsimonious description of the data. The section in the Findings chapter entitled Interpretation of the Clusters will also present the interpretation of these factors. Appendix E 3 displays the rotated factor matrix of the five factor solution.

These five factors then became the underlying dimensions of the construct of professional-organizational functioning. Factor scores were determined for each individual on each of the five dimensions, yielding profiles of each individual according to the five factor-dimensions of professional-organizational functioning.[4] The task was then to determine if relatively mutually exclusive clusters of these profiles existed. In order to investigate this, a method similar to that discussed in Overall and Klett (1972, pp. 180-187) using a simple distance-function to measure the distance between profiles was used. However this was complicated somewhat by the large number of subjects, 511, requiring an enormous amount of computer storage.

To resolve this storage problem a three step process was devised. The first step was to select a 20 percent (102 respondents) stratified random sample of the respondents with respondents stratified by state, location (i.e., urban, suburban, rural), and role. In order to determine that the 20 percent random stratified sample was not significantly different from the remaining 80 percent (409 respondents) of the respondents the multivariate factor score distributions (five factors) in each of the two groups were compared. The Wilks Lambda of .993379 yielded an F ratio of 0.673142 which was not significant at the .05 level. Therefore we concluded that the 20 percent stratified random sample was a reasonable representation of the entire data set. Once we had established this, the third step was to identify profile types (clusters) in that 20 percent representative set. This process alleviated the computer time problem. However, in doing this, it is true that some of the accuracy with which the clusters were identified was lost, in contrast to using the entire set of respondents.

Using the 20 percent sample, the factor score profiles of the individual respondents were submitted to the profile classification analysis. This analysis is mathematically described in Overall and Klett, 1972, pp. 192-194. The following is an attempt to briefly describe the technique.

---

[4] The factor score formula used was $z = xr^{-1}p\acute{o}$ where x = score matrix, r^{-1} = increase of the correlation matrix, p = primary factor pattern, and $\acute{o}$ = correlations among factors (an identify matrix for orthogonal varimax rotated factors). (Cooley and Lohnes, 1971)

The cluster program is designed to calculate distances between profiles on all of the subjects. The task is then to find the three respondents which are closest in distance. These three individuals represent the initial core (nucleus) within a specified range of the first profile class, or cluster. The next task of the program is to search through the remaining sample set to find other individuals within a specified distance from the centroid of the cluster. Once this first search exhausts all possibilities, the remaining set of respondents is searched for the three closest remaining individual profiles within a specified range to form a new nucleus. If three individuals cannot be identified under the criteria, the program is designed to identify two. The process terminates when no more sets of core individuals can be found to define a cluster.

Using this process, seven clusters were identififed. Seven individuals were not assigned to any cluster based on the criteria used in the program. This meant that ninety-five individuals were assigned to one of seven clusters. The first cluster contained sixty-one, the second cluster contained ten, the third eight, the fourth seven, the fifth three, the sixth four, and the seventh two.

Since the purpose of this cluster analysis was to determine a reasonable estimate of the cluster structure of the entire data set, steps were then devised to assign the remaining 80 percent (plus the seven individuals in the sample who were not assigned a cluster) to one of the seven clusters based on their factor-dimension profiles. This was done by calculating the centroids of the clusters derived from profiles of the individuals in the 20 percent sample (subset). Subjects were assigned to the cluster whose centroid was the smallest distance from their factor-dimension profiles. This technique resulted in 268 individuals in cluster one, fifty-three in cluster two, forty in cluster three, thirty-seven in cluster four, forty-five in cluster five, thirty in cluster six, and thirty-eight in cluster seven.

In order to determine whether the sample clusters were still reasonably close to the clusters now represented by the total data set, mean scores were again calculated for each of the five dimensions in each of the clusters. The comparison of these mean scores is presented in graphic form on Figure 5. The discrepancy between the sample and the total data set clusters on the dimensions increases from cluster one to cluster seven. In general the means of the sample represented a regression toward a factor score of zero. For example, if the mean factor score of the total set of respondents was above one on a particular dimension then the sample mean was lower than that of the total set. Conversly, if the mean factor score on the total data set was below zero the sample mean was higher than the total data sets mean.

Multivariate Analysis of Variance

The actual analysis of the data, defined in terms of the survey design and scoring procedures outlined above, was conducted via a multivariate analysis of variance approach. The rationale underlying the use of such a generalized approach, rather than the more commonly used repeated measures approach, was based upon the assumed untenability of two of the basic assumptions which characterize the latter procedure. That is, it was assumed that the variances of participant responses across diffusion tactics, stages of adoption, and examples would not be homogenous, and that the correlations among all those responses would not be equal. As a result, a procedure analogous to that proposed by Greenhouse and Geisser (1958) and described by Finn (1969) was employed.

The overall results of the analysis are summarized in Table 13. An inspection of that table reveals that the summary data are displayed in terms of a somewhat standard ANOVA format. That is, those sources of variance perceived to be particularly relevant to the formulation of diffusion strategies, as indicated in the accompanying rationale, are listed in the initial column, followed by their related significance tests and supportive data.

Further inspection of Table 13 reveals that a number of the two-way and higher order interactions that might have evolved given the basic eight factor design scheme described earlier were not tested in the analysis. The decision to omit those tests was based upon the following:

1. only those effects, both main effects and interactions, indicated in the rationale were considered,

2. a "complete factorial" analysis was not attempted due to the attendant sample size requirements and associated cost considerations (such an analysis would have required a minimum of over 6800 respondents equally distributed across cells), and

3. given the preceding constraint and its related implications, the reduced sample size employed in the survey would have yielded cell frequencies of zero for many of the "potential" interactions.

Based upon the preceding considerations and constraints the actual analytical procedure employed might be referred to as an incomplete, multivariate factorial algorithm with unequal n's, and associated randomized blocks. The execution of that analytical procedure (using Finn's Multivariants Program [1968]) was based upon an approach described by Overall and Klett (1972, p. 443), which reflects directly the earlier works of Sendecor and Cochron (1967) and Rao (1965). More specifically, the approach followed, given the unequal cell frequencies; involved the estimation of main effects disregarding interactions, followed by the estimation of the selected interactions adjusted for main effects. Also, since the three blocking variables were included, each of the factorially related tests were estimated following the adjustments for those two factors.

Given the preceding, general analytical strategy, the different F - values summarized in Table 13 were based upon the following sets of dependent variables:

1. the between subject tests, both main effects and interactions, employed the sums of the tactics by stage of adoption by example responses described earlier,

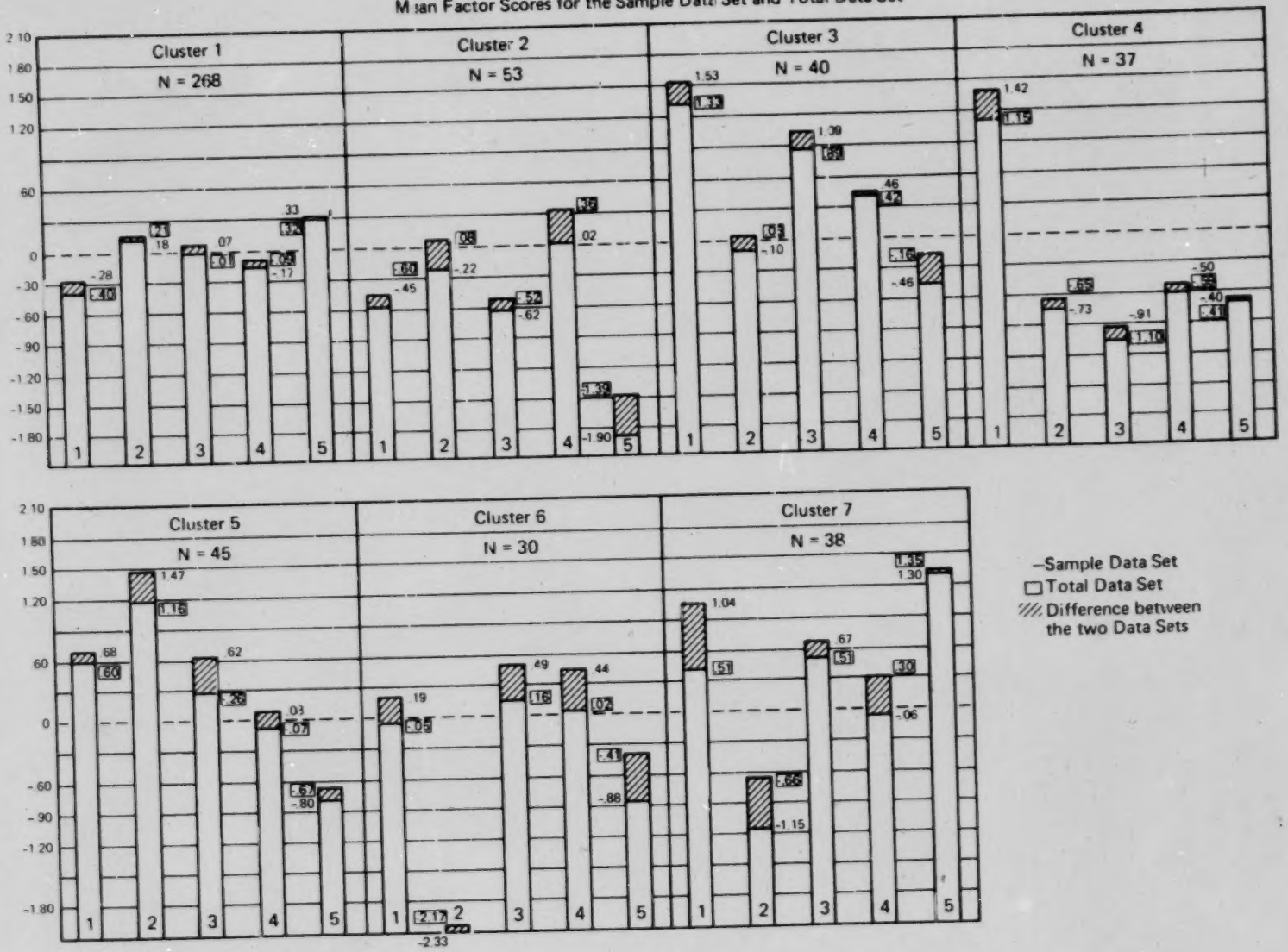
2. the main effect for tactics employed the seven "tactics" sums within subject described earlier,

3. the main effect for stages of adoption employed the five "stage of adoption" sums within subject described earlier,

4. the interaction of tactics and stages of adoption were based upon the thirty-five "tactics X stage of adoption" sums described earlier, and

5. the interactions of the within and between variables employed the same sums that were used when testing for the designated within subjects main effects.

Figure 5
Mean Factor Scores for the Sample Data Set and Total Data Set



Due to the number and complexity of the potential set of descriptive statistics, e.g., means and standard deviations, that could be produced given the many relationships tested via the indicated analysis, the decision was made to display such statistics only for those relationships that were shown to be significant in Table 13.

Chapter III

Findings

The findings of this study are presented in three parts: (a) the interpretation of the client-type clusters, (b) the relationship of respondent demographics with the clusters, and (c) the results of the multivariate analysis of variance tests. The first section of the chapter describes the client-type clusters. The client-type clusters are based on the respondent's reactions to the Professional Opinion Survey item. These items were factor analyzed to identify dimensions of behavior which could be used to characterize practitioners as adopters of innovation. The output from the factor analysis was used to identify the client clusters. The client clusters are types of people with varying orientations to the factors which underlie the adoption of innovations.

The second section of the chapter relates respondent demographics to the client-type clusters in an attempt to identify client types through the use of observable characteristics. Correlations from the 1972 study of demographics with the empirical dimensions are reported. These correlations were used as a basis for revising the questionnaire for the 1973 data collection activities.

The multivariate analysis of variance findings consititue the final section of this chapter . Only the significant relationships are illustrated in the data arrayed. These data report the outcomes from the incomplete eight factor design which included client clusters as an independent variable.

Interpretation of the Client Type Clusters

Two steps were necessary to derive an interpretation of the clusters in terms of the demographics and the construct of professional-organizational functioning. The first step was the interpretation of the factor-dimensions of the professional-organizational functioning construct. The second step was to then synthesize the information from the factor-dimensions profiles of each cluster in order to derive an interpretation of the content of those clusters.

The Interpretation of the Factors. To interpret the factors the items of each of the five factors which had a factor loading of .30 or greater were rank ordered. The content of these items was then analyzed to determine an underlying construct which was being reflected by the particular set of statements.

The items of factor one and the associated factor loadings are presented in Table 4. The label given to this factor was Economic Concern Orientation. Throughout the items in this factor there exists an expression of concern for whether the individuals will have the time, money, and personnel to accomplish the tasks they are responsible for. The desire for efficient use of resources would be another way to describe the concern that is expressed in this factor.

The items in factor two and their associated factor loadings are presented in Table 5. The label given to this factor was Bureaucratic Orientation. A person rating high on this factor would maintain rather strict adherence to the rules, regulations, and protocol of the bureaucratic aspects

Table 4

Varimax Rotated Factors from the Professional Opinion Survey

Factor 1. Economic Concern Orientation

Item	Ranked Factor Loading	Item Content
40	.47	Very seldom do I have the resources to accomplish the tasks related to my role.
21	.45	The problem with trying new practices is that you are expected to do the whole thing by yourself.
18	.42	To receive money for something I do well is often more important to me than to receive approval from my peers.
15	.42	The main barrier to change is not a lack of good, new ideas, but gaining funds to support those ideas.
33	.38	Often, my ideas are reinterpreted by my superiors so that I do not receive credit for them.
50	.38	The best way for me to advance myself in my present position is to frequently suggest changes.
29	.38	Knowing the right people in the organization is more important than rational discussions when I am trying to get a decision to go my way.
22	.37	I have little faith in policies which I have not been instrumental in forming.
27	.36	The only kind of change I will accept is that which has been tested and proven by others to be better.
19	.31	Education should be run more like a business.

Table 5

Varimax Rotated Factors from the Professional Opinion Survey

Factor 2. Bureaucratic Orientation

Item	Ranked Factor Loading	Item Content
46	.55	I adhere closely to the policies and rules of the organization in which I am employed.
31	.50	When a decision has to be made, I find it most efficient to go through the standard channels or procedures.
35	.46	My approach to innovations is most often to play it slow and sure.
43	.36	I find it is always better to rely on research-based evidence rather than on intuition judgment if the research is available.
42	-.36	I try to bend the rules of the organization in which I am employed so as to match the situation.
14	.35	I find that it is best to pool my judgments with my superiors rather than making decisions on my own.
16	.32	When faced with a decision, I tend to rely primarily on hard evidence related to the alternatives.
17	.31	Administrators are better qualified than non-administrative personnel to evaluate work performance.

of his employing organization. This dimension is further characterized by the suggestion of low risk taking and a reliance on statistical judgments made by the administrators or perceived experts for decision-making.

The items of factor three and the associated factor loadings are presented in Table 6. The label given to this factor was Activity Level. This dimension reflects a continuum of expenditure of energy from only doing enough to get by to a hyperactive and aggressive work pattern.

The items of factor four and the associated factor loadings are presented in Table 7. The label given to this factor was Self-Reliance. What is suggested in the content of this factor is a rather independent attitude concerning what sources of information they rely upon when making a decision. A secondary emphasis of this factor is the preference for informality in working with other people.

The items of factor five and the associated factor loadings are presented in Table 8. The label given to this factor was Desire for Leadership. Although there were not many items which were strongly related to this factor, the items which were present clearly suggested a hard working person who likes competition and leadership responsibility.

Individual Interpretations of the Clusters. Because the dimensions used originally to define client-type clusters were the factors, examining the locations of the clusters centroids along these dimensions should serve to describe those clusters. However, the task of interpreting the clusters was extremely difficult. It was quite clear that the seven client-type clusters did exist in the data. However, the differentiation among them on the basis of the factors was not very clear.

Cluster one (N = 268) was labeled as the Political Professional. From the factor profile of this cluster (Figure 5) we see that individuals in this cluster responded in a rather constant manner to the factor-dimensions. This would suggest a "middle of the road" response to the concerns of the factors. If there were any discriminating aspects of this factor profile it would be the slight nonconcern for economic matters related to their role and the slight positive desire for leadership responsibilities. This could be interpreted, for example, to mean that individuals in this cluster would be willing to accept greater responsibility with little concern for a raise in pay. It should also be noted that this cluster contained 52 percent of the total respondent set. This may further suggest that the norm operating in the respondent set of educational practitioners is that of not having any extreme positions on any of the five dimensions.

Cluster two (N = 53) was labeled as the Moderate Practitioners. The factor profile of these individuals (Figure 5) shows that individuals in this cluster tended to be somewhat less concerned about economic matters and had somewhat lower activity level than the average respondent. In addition, individuals in this cluster had a very low desire for leadership responsibilities. This latter characteristic was consistent with the somewhat lower activity level. Individuals in this category did not have a strong positive or negative relationship to bureaucratic rules and procedures nor tendency to rely on themselves in terms of decision-making situations.

Cluster three (N = 40) was labeled as the Businessman. The factor profile (Figure 5) suggests a very strong concern for the economic aspects of their professional tasks. These individuals also tend to be quite active and rely on themselves when making decisions. Comparatively, the individuals in this cluster are not strongly for or against the use of bureaucratic procedures. Also, these individuals have a slight tendency toward not desiring leadership responsibilities.

Table 6

Varimax Rotated Factors from the Professional Opinion Survey

Factor 3. Activity Level

Item	Ranked Factor Loading	Item Content
49	.53	I often find myself working on necessary tasks related to my role after normal working hours.
12	.42	I enjoy creating distinctively different techniques or ways of doing things.
44	-.42	When I have put in a day's work, I most often do not concern myself with work-related problems in the evening.
8	.36	Extensive preparation is the key to success in the accomplishment of an important task.
45	.35	I keep abreast of current developments in my professional field.
7	.33	I use most of the mechanical and electronic aides related to my professional task that are available to me.

Table 7

Varimax Rotated Factors from the Professional Opinion Survey

Factor 4. Self-Reliance

Item	Ranked Factor Loading	Item Content
26	.50	Though I seek for information, I often rely on my own instincts and judgments rather than insisting on hard evidence.
1	.40	When trying something new, I will usually rely on my own judgments as to how it should work or be used rather than relying on the general instructions.
24	.36	Statistical evidence may be important, but it is not practical for the decisions I have to make each day.
38	.31	I find I can accomplish more working alone than working with my colleagues on a problem.
28	.31	When I work with other people, I prefer it to be in an informal manner.
25	.30	People consider me easy going.

Table 8

Varimax Rotated Factors from the Professional Opinion Survey

Factor 5. Desire for Leadership

Item	Ranked Factor Loading	Item Content
9	.57	I enjoy working in situations which put me in a position of leadership and responsibility.
6	.42	I work well in a competitive atmosphere.
10	.36	I am usually seen as a hard worker.

Cluster four (N = 37) was labeled as the Powerless Functionary. The factor profile (Figure 5) of this cluster was rather distinctive. There was a high concern for the economic aspects of their tasks and very low or negative relationship to the remaining factors. Therefore, the interpretation was that these individuals were very concerned about having enough resources or the energy, or self-confidence, or desire, to carry out their job or solve any of the problems related to it. Thus they were perceived as simply carrying out their assigned responsibilities in a very perfunctory and limited manner.

Cluster five (N = 45) was labeled as the Bureaucrat. The factor profile (Figure 5) shows that these individuals are primarily concerned about adhering to the bureaucratic rules and procedures which encompass their roles. Secondly these individuals have a greater than average concern for the economic aspects of their roles. Along with these concerns they do have a somewhat higher than average level of activity. However, they do not desire leadership responsibilities and are not particularly related one way or the other to being self-reliant.

Cluster six (N = 30) was labeled as the Anti-Bureaucrat. This label reflects the fact that the individuals in this cluster were very negatively associated with the factor of bureaucratic orientation (see Figure 5). Along with this they also had a somewhat lower than average desire for leadership. These two factors put together suggests that these individuals may be considered agitators in an organization. The other factors were not distinguishing aspects of this cluster.

Cluster seven (N = 38) was labeled as the Entrepreneur. The strongest characteristic of the individuals in this cluster were their desire for leadership responsibilities, their concern for the economic aspects of their tasks, and their higher than average level of activity. These individuals do not feel that it is necessarily advantageous to adhere to the bureaucratic rules and regulations which are associated with their role as an employee of an organization. The thing that does not make this factor quite as consistent with the notion of entrepreneurialship as one might expect is the nominal relationship of these individuals to being self-reliant.

The Relationships of Individual Demographics with Client-Type Clusters

Once factors were interpreted and the client-type clusters were identified, individual demographics were related to the client-type clusters in order to further clarify the interpretation of the clusters. Twelve measures of demographic variables identified in a previous use of the client type questionnaires (Kester and Hull, 1973) were used. In a subsequent analysis of the data collected for that study, the demographics were related to the identified factors. Appendix G contains correlations among client images and other factors associated with innovation characteristics. In addition, correlations between the factor dimensions and the demographics are listed for the 1972 data. Table 9 displays the multiple correlation coefficients for client factors with demographic variables. In reviewing the multiple correlations it was noted that four of the demographic categories had no significant ($p. < .05$) multiple correlations. These were birth order, years experience at present job, size of undergraduate school, and size of graduate school. Therefore, those four individual demographics were not collected for the study reported in this document. This left fourteen individual demographics that were collected for this report. In addition to the twelve listed on the last page of the questionnaire (See Appendix A), two other pieces of information were collected: the state in which the respondents were located, and location (i.e., urban, suburban, or rural) of the school district in which they were employed.

Table 9

Multiple Correlation Coefficients of Biographical Demographics with Client Factors from the 1972 Data Set and Analysis of Client Factors

Demographics	Multiple Correlation Coefficient (R)[a]
Age	.23*
Sex	.29**
Marital Status	
Single	.09
Married	.16
Divorced	.21*
Other	.13
Birth Order	
First Child	.10
Middle Child	.05
Last Child	.12
Area Raised	
Urban	.17
Suburban	.12
Town	.14
Rural	.22*
Income Level	.32**
Educational Level	.33**
Major Area Studied	
Education	.11
Vocational Education	.23**
Humanities	.22*
Math and Science	.20*
Professional	.15
Split Major	.12
Professional Travel	.30**
General Travel	.27**
Years Experience at Present Job	.08
Total Experience in Profession	.27**
Number of Job Changes	.23*
Size of Undergraduate School	.16
Size of Graduate School	.07
Present Position	
Teacher	.43**
Principal	.20*
Central Administrator	.14
State Department Staff	.38**
Teacher Education	.21*
State Board Member	.14
State Advisory Council	.16
Present Location of Position	
Rural	.38**
Suburban	.16
Urban	.17

a * $p < .05$
** $p < .01$

The plans for analysis of the data reported here called for a discriminant analysis to determine the discrimination of the demographics among the clusters. It was necessary to transform the demographic information to numeric scales. In the process, each category of response for a given question became a dichotomous (yes or no) variable in its own right. This transgeneration yielded some forty-odd new variables, far exceeding the number of subjects in the smallest group (N = 30). Therefore it was necessary to eliminate some of the demographics from the analysis. To do this the means of the standard scores of the demographics among the clusters were used to eliminate certain demographic categories or subcategories which were not discriminating. Only those demographic categories with at least one cluster with standard score mean greater than .15 or less than -.15 were included in the analysis. This eliminated variables having near-zero means on all clusters—those which were obviously not discriminating. This left seven areas of demographics with a combined total of sixteen categories.

Tables 10 and 11 show the results of the discriminant analysis and the related group means. Of the six discriminant functions obtained, the first four accounted for 89.96 percent of the explained variance and the remaining two for 10.04 percent. Therefore, four discriminant functions were selected for use in the interpretation of the clusters.

The first discriminant function reflects a relationship of the respondents as being located in State B, having a B.S. degree, and being a teacher. The cluster which is most closely associated with this function is cluster two. However, the relationship is not very strong.

The identifiers for the second discriminant function are state location, gender, and the number of job changes. However, this second function is not discriminant within these categories. As a result, this factor did not assist in differentiating among the clusters.

The third discriminant function is characterized by those individuals having a B.A. degree in the area of humanities and being a principal. This function was slightly related to clusters two and six.

The fourth discriminant function can be described as relating to male respondents who earn higher than $10,000 and are either a teacher or principal rather than a central administrator. This function was not really positively associated with any of the clusters. It was, however, slightly negatively associated with cluster seven.

It should be emphasized that group means on the discriminant functions were all very nearly zero, indicating that even the maximal combinations of demographics did not discriminate with any obvious certainty at all. Consequently, the discriminant functions were not very useful in providing any clarification concerning which demographics were most closely associated with which clusters. Likewise, the means of the standard scores of the demographics among the seven clusters were of little use in this respect.

However, if the demographics are related to the clusters on an individual basis, some slight tendencies can be interpreted. The following discussion relates the demographics to the clusters.

From the means of the standard scores (Table 12) the individuals in cluster one have had a number of job changes and tend to be in a role other than teaching. The discriminant functions

Table 10

Scaled Vectors of the Discriminant Functions Relating the Individual Demographics to the Client Type Clusters

Demographics	Scaled Vectors 1	2	3	4
State				
A	2.58	12.27	-14.60	-6.77
B	4.18	12.70	-11.67	-8.72
Sex				
Male	-14.07	-9.04	5.18	9.91
Female	-15.45	-9.91	5.38	8.72
Income				
10K	1.83	-.15	-5.43	1.26
10K - 16K	1.90	.18	-1.21	5.00
16K +	1.74	.34	.25	6.05
Educational Level				
B.S.	2.68	.01	2.40	1.01
M.S. +	1.71	-.07	1.64	-2.14
Area of Major Study				
Humanities	-.07	-.18	4.50	-.96
Education	-.06	.12	.57	-.77
Job Changes				
0 - 3	-.95	1.10	-3.48	1.09
4 - 7	-2.57	1.07	-3.22	-.78
Role				
Teacher	2.73	.31	1.25	7.16
Principal	.37	.20	2.04	7.06
Central Administrator	.54	.20	.23	5.16

Table 11

Group Means on the Discriminant Functions

Cluster	Group Means by Discriminant Function			
	1	2	3	4
1	-.05	.06	.01	.00
2	.11	-.03	.12	.05
3	.06	-.01	-.24	.03
4	.09	.05	-.04	-.06
5	.01	.01	-.03	.07
6	.04	.03	.15	-.02
7	.02	-.04	-.01	-.13

Table 12

Means of Standard Scores of the Demographics
Among the Seven Client-Type Clusters

Demographics	Clusters 1	2	3	4	5	6	7
State							
A	.08	-.06	.21	-.39	.10	-.53	-.03
B	-.07	.03	-.21	.39	-.09	.54	-.01
Sex							
Male	-.03	-.19	.00	.37	.15	.31	-.31
Female	.04	.17	.01	-.41	-.14	-.29	.27
Income							
under 10,000	-.10	.02	.63	.10	-.13	-.24	.26
10,000 - 15,999	.01	.06	-.04	.07	-.01	-.21	-.01
16,000 +	.06	-.08	-.33	-.15	.12	.36	-.23
Educational Level							
B.S.	-.08	.40	.30	-.12	.00	-.18	-.08
M.S. +	.05	-.33	-.30	.11	.06	.21	.07
Area of Study							
Humanities	.01	.29	-.19	-.18	-.28	.16	.12
Education	.04	-.22	-.13	.14	.07	-.05	-.04
Job Changes							
0 - 3	-.10	.18	.27	.12	.10	.01	-.16
4 - 7	.15	-.40	-.18	-.08	-.21	.09	-.03
Role							
Teacher	-.16	.43	.37	.05	-.05	.09	.07
Principal	.11	-.13	-.28	.02	-.01	-.04	-.27
Administrator	.10	-.42	-.15	-.12	.10	-.04	.07

were not at all useful which suggests that the means of the standard scores are less reliable in providing information concerning the discriminating demographics.

The individual demographics which tended to discriminate the second cluster tended to include individuals who were female, had a B.S. degree in the area of humanities, had few job changes, and were teachers. Again the discriminant functions failed to isolate this second factor and so we cannot place much weight on the small differences detected in the means of the standard scores.

The demographics of the individuals in the third cluster tended toward being in a lower salary range; having a B.S. degree; having changed jobs very few times; and having a teaching role. From the previous interpretation of the cluster one might expect these individuals to be the central administration business manager; however, this does not seem to be the case. The interpretation of these related demographics indicate that there are a number of educational practitioners who take a very economically oriented view toward how schools should be conducted. This means that their concern for the existence and exchange of resources (time, money, and personnel) to accomplish their tasks is primary.

The only demographics which were even slightly related to cluster four were those of being male and an education major. Again, the discriminant functions did not bear this out.

The relationships for cluster five also were weak. There was a slight tendency toward these individuals being male; having a higher income; not being a humanities major; and having changed jobs only a few times. However, as in most of the other clusters, these relationships were not confirmed by the discriminant functions.

The demographics were somewhat useful in identifying the individuals in cluster six. It appeared that these individuals were males with relatively high salaries and had graduate degrees possibly in the humanities as opposed to some other area. These demographics were partially supported by the relationship of the third discriminant function to this cluster. However, the relationship was so tenuous that not much weight should be placed on its reliability.

The demographics in cluster seven indicated the individuals tended to be female teachers with a relatively low salary. This finding was not supported by the discriminant functions.

These data seem to be indicating that the individuals were identifiable by clusters but that the differences between these individuals was on the basis of psychological and implied behavioral dimensions and not on individual demographics. This is useful information because it tends to discredit the use of individual demographics to stereotype individual's psychological and behavioral states. It also implies that in order to get at the differences in the ways in which educational practitioners respond to change, observational schemas must be developed which rely more on an individual's psychological and behavioral states rather than on demographics.

The Multivariate Analysis of Variance Findings

The preceding sections of this chapter have discussed (1) the factor structure underlying the identification and interpretation of client-type clusters, and (2) the utility of using individual demographics to identify membership in the clusters. This section of the chapter describes the statistical findings associated with the results from the incomplete eight factor design. The section is organized by the seven operational hypotheses identifed in Chapter One.

Table 13 contains the results of the analysis of variance test. The between subject variables were tested using the sum of all of the effectiveness ratings for all of the tactic examples across all of the stages of adoption. Only one variable was significant at the .05 level of significance. This is the client-type cluster variable. None of the interactions among the main effects tested by the sum of the tactic effectiveness ratings were significant. The interactions were selected a priori to the formulation of the design; the conceptual framework described earlier in this report was used as a basis for selecting variables most likely to influence the perceived effectiveness of diffusion tactics.

Both of the within subjects main effects (tactic type and stage of adoption) were significant. That is, the subjects' perceived differences among the types and stages of adoption. The measurement of this perception was sharpened by the use of repeated measures of tactic effectiveness for each subject. Likewise, the interaction among tactic type and stage of adoption was significant. Only two of the remaining interactions were significant at the .05 level: the role times tactic type interaction, and the tactic sequence times tactic type interaction.

Hypothesis 1. The effectiveness of diffustion tactics will be perceived differentially by respondents with different demographics (membership in a state, geographic location, and role).

The findings on the blocking variables of state, location, and role were not significant. No interactions with membership in a state were deemed to be relevant (by the researchers) to the perceived effectiveness of diffusion tactics. The tactic effectiveness means for the states, 28.33, 26.83, and 27.75 respectively, indicate very few differences in perceptions among the states studied. These means were consistent despite the heavy concentration of urban teachers in state three. See Appendix C for additional information on sample statistics.

The literature review and conceptual framework used to select variables for the study indicated the desirability of examining role as a variable in the diffusion of innovations. The researchers expected differences between perceptions of teachers and administrators. Such differences, if they existed, could have extended to include differences in perceptions of rural versus urban and suburban respondents. The data did not support this expectation. No significant differences existed in the main effects of role or location or the interaction of these variables. The tactic effectiveness means show few differences in the cells illustrated.

Hypothesis 2. The effectiveness of diffusion tactics will be perceived differentially by the type of client being asked to accept an innovation.

If, in fact, the acceptance of educational innovations is more of a psychological state than membership in a state, or role, or geographical location, then it should be possible to measure that state or condition which leads an individual to consider an innovation and condone practices or actions of a change advocate. The Professional Opinion Survey (contained in Appendix A) was designed to measure self perceived characteristics of individuals which relate to the adoption of educational innovations. The responses were used to identify underlying dimensions of innovation adoption behavior and to cluster respondents into one of seven group memberships. See the previous chapter for the methodology of this clustering process. These seven groups represent levels of the Client-Type Cluster variable, one of the main effects in the incomplete eight factor design.

Table 13

The Results of the Analysis of Variance

Source of Variance	No. of Dep. Var.	df 1	df 2[a]	Univariate f-Value	Univariate p-Value	Multivariate f-Value	Multivariate p-Value
Between Subjects							
State (S)	1	2	508	.04	<.96		
Location (L)	1	2	466	.82	<.44		
Role (R)	1	2	466	1.79	<.17		
Innovation Type (IT)	1	2	466	2.05	<.13		
Tactics Sequence (TS)	1	5	505	1.27	<.28		
Cluster (C)	1	6	466	2.60	<.02		
(L) x (R)	1	4	466	.83	<.50		
(R) x (IT)	1	4	466	.68	<.61		
(R) x (C)	1	12	466	1.26	<.24		
(IT) x (C)	1	12	466	.39	<.97		
Within Subjects							
Tactics (T)	6	6	461			15.91	<.0001
Stage of Adoption	4	4	463			89.41	<.0001
(T) x (SA)	24	24	443			5.40	<.0001
(TS) x (T)	6	30	2002			57.49	<.0001
(L) x (T)	6	12	922			1.23	<.26
(R) x (T)	6	12	922			1.89	<.03
(IT) x (T)	6	12	922			.87	<.58
(C) x (T)	6	36	2027.2			.84	<73
(IT) x (SA)	4	8	926			.77	<.63
(IT) x [(T) x (SA)]	24	48	886			.89	<.68
(C) x [(T) x (SA)]	24	144	2596.9			1.14	<.13

[a]See Jones (1966) p. 249 for additional information.

Table 14 contains the main effect totals for the client cluster variable. Notice the differences among the totals for the client clusters. The low mean of 185 perceived effectiveness rating of diffusion tactics for cluster four is significantly different at the .05 level from the 206 mean rating from respondents in cluster seven. The individuals who hold membership in these two clusters represent extreme types of innovation adopters. The Powerless Functionary (cluster four) would tend to let events and actions of change advocates impact on him, while the Entrepreneur (cluster seven) would tend to identify with the change advocate and feel very positive about the use of tactics to influence the actions of others.

Hypothesis 3. The perceived effectiveness of diffusion tactics will differ from one tactic type to another.

Professional educators can be expected to recognize differences in effectiveness of diffusion tactics as they are used to install educational innovations. Table 15 shows mean scores for tactic types which differed significantly at the .05 level. The examples of diffusion tactics in the instrument categorized as "influence" tactics were rated most effective with a mean score of 30.00 points. The category of tactics rated least effective was the "reward or punish" category with a mean rating of 26.23 points. Conversations with respondents after they had completed the instrument indicated suspicion of tactics which would threaten or provide incentives for clients in a blatant manner. These responses could reflect subject reaction to the examples of tactics used to represent the category of the particular tactic type. See Appendix D for information on the selection of tactic examples.

Only two of the tactic type interactions with a variety of other variables were significant. The interactions of tactic type with location, tactic type with innovation type, and tactic type with client type clusters were not significant. It may be that the measurement of perceived effectiveness of tactic type as summed across all stages of adoption was not sufficiently precise to attribute variation to these other sources of interaction. Or it may be that no interactions exist with these variables.

One of the significant tactic type interactions, the interaction with the role variable, was not anticipated. Thus, no hypothesis was written in advance of the analysis. The other tactic type interaction, the one with stages of adoption, will be discussed under hypothesis number five later in this chapter.

The tactic type by role interaction is illustrated in Figure 6. The tactic effectiveness scale represents the average score for both examples of a tactic type summed across all stages of the adoption process. The reader should note the relatively higher scores assigned by principals for most tactics compared to scores assigned by teachers and central office administrators. Central office staff and principals tend to place higher ratings on influence tell tactics than teachers; this pattern did not hold for other tactic types.

Hypothesis 4. The effectiveness of diffusion tactics will be perceived differentially by stages of the adoption process.

The diffusion tactics are perceived to be most effective at the awareness stage of the adoption process with a progressive loss of effectiveness for each succeeding stage. As the client gains more information on the product or innovation being considered, the tactics are perceived to have less and less effect on the client's adoption decision. This finding is illustrated in Table 16. A difference in

Table 14

Perceived Effectiveness of Diffusion
Tactics by Client-Type Clusters

Client Clusters	N	Mean	Standard Deviation
1. Political Professional	268	195.35	29.29
2. Moderate Practitioners	53	202.26	32.17
3. Businessman	40	201.92	32.40
4. Powerless Functionary	37	185.03	29.96
5. Bureaucrat	45	201.40	35.03
6. Anti-Bureaucrat	30	187.90	25.62
7. Entrepreneur	38	205.63	33.77
Total	511	196.69	30.87

Table 15

Perceived Effectiveness of Diffusion Tactics
by Tactic Type and Role[a]

Tactic Type	Teacher N=322	Principal N=93	Central Administrator N=96	Total
Tell				
Mean	27.31	28.45	28.51	27.75
Standard Deviation	8.34	8.16	9.31	8.50
Show				
Mean	28.14	28.57	27.89	28.17
Standard Deviation	8.10	8.09	8.53	8.17
Discuss				
Mean	27.50	28.09	25.51	27.23
Standard Deviation	6.89	6.67	7.73	7.05
Influence				
Mean	29.43	30.93	31.05	30.00
Standard Deviation	7.93	7.22	7.34	7.72
Involve				
Mean	28.54	28.46	27.20	28.27
Standard Deviation	7.17	7.06	6.66	7.06
Reward or Punish				
Mean	26.06	27.02	26.02	26.23
Standard Deviation	7.60	8.50	7.77	7.79
Mandate or Order				
Mean	28.63	30.59	28.91	29.04
Standard Deviation	7.90	8.52	7.01	7.88
Totals				
Mean	27.94	28.87	27.87	28.10
Standard Deviation	7.70	7.74	7.76	7.74

[a]The mean ratings of perceived tactic effectiveness were computed for tactic type across all stages of adoption.

Figure 6

Perceived Level of Tactic Type Effectiveness
By Respondent Role

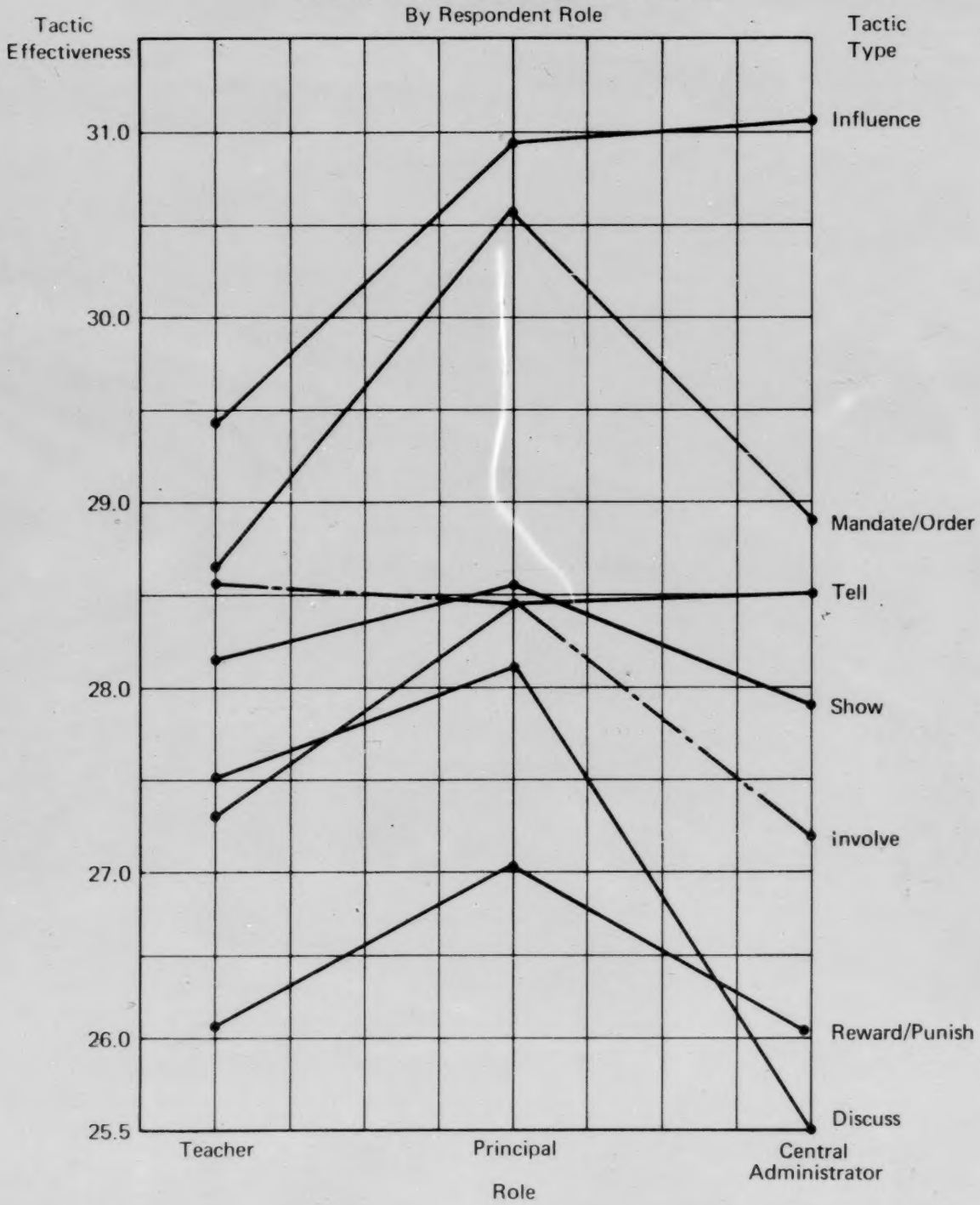


Table 16

Perceived Effectiveness of Diffusion Tactics
at a Particular Stage of Adoption[a]

Tactic Type	Stage of Adoption (N=511)				
	Awareness	Interest	Evaluation	Trial	Adoption
Tell					
Mean	6.31	6.08	5.43	5.05	4.87
Standard Deviation	2.22	1.98	2.10	2.12	2.11
Show					
Mean	6.15	6.09	5.61	5.38	4.94
Standard Deviation	2.19	1.96	2.02	2.13	2.16
Discuss					
Mean	6.16	6.10	5.37	5.01	4.59
Standard Deviation	1.99	1.75	1.78	1.94	1.97
Influence					
Mean	6.24	6.35	6.17	5.90	5.35
Standard Deviation	2.04	1.83	1.79	1.94	2.05
Involve					
Mean	6.21	6.19	5.55	5.30	5.03
Standard Deviation	2.00	1.80	1.77	1.96	2.03
Reward or Punish					
Mean	5.84	5.75	5.11	4.89	4.63
Standard Deviation	2.04	1.88	1.82	2.05	2.05
Mandate or Order					
Mean	6.26	6.31	5.80	5.52	5.15
Standard Deviation	2.14	1.82	1.91	2.03	2.14
Totals					
Mean	43.17	42.87	39.04	37.05	34.57
Standard Deviation	9.58	7.28	7.25	8.30	9.11

[a] Two examples of each tactic were used.

the perceived effectiveness of diffusion tactics at the awareness stage of adoption (mean score of 43.17) as compared with the perceived effectiveness of diffusion tactics at the adoption stage (mean score of 34.57) is significant at the .05 level. The awareness and interest stages of adoption tended to group together for tactic effectiveness with only 0.3 of a point separating the two stages. This finding tends to suggest that diffusion tactic types will be equally effective for the awareness and interest stages of the adoption process. The widest gap in the stages was between the interest and evaluation stages, a separation of 3.83 points.

Hypothesis 5. The types of diffusion tactics will be perceived as differentially effective for different stages of the adoption process.

The researchers expected an interaction between type of diffusion tactic and stage of adoption. The data as illustrated in Table 16 support this hypothesis at the .05 level of significance. The reward or punish tactics at the adoption stage were rated the lowest at 4.63 points, while the influence tactics at the interest stage were rated the highest at 6.35 points. These data tend to confirm the interpretations of the associated hypothesis that client acceptance of an innovation tends to be less subject to influence at the adoption stage. In particular, tactics which promise rewards or reprimands are perceived as ineffective at this stage. Likewise, it is interesting to note the low ratings given to discuss tactics at the adoption stage.

The interaction between tactic type and stage of adoption is illustrated in Figure 7. Notice the relatively small differences among tactic type effectiveness ratings for the awareness and interest stages. The differences among the tactic types are greatest at the evaluation and trial stages of the adoption process. Clearly, the influence tactic is perceived as most effective at almost every stage of the adoption process. Despite this perception, the influence tactic type pattern conformed to the group means: the perceived effectiveness levels became progressively lower as the client approached the decision to adopt the innovation.

Hypothesis 6. The effectiveness of diffusion tactics will <u>not</u> be perceived differentially by the sequence of the tactic type.

The tactic examples were presented in six sequences. The sequences were randomly assigned to subjects. Six sequences was an arbitrary number; the tactic sequence variable was used to guard against the possibility of a sequence effect. Much to the surprise of the researchers, there was a tactic sequence by tactic type interaction which was significant at the .05 level. See Table 13. Tactic sequence as a main effect between subjects was not significant. Apparently, the subjects may have developed a mind set toward the questionnaire based on the nature of the first few tactic examples presented to them.

Table 17 illustrates the tactic sequence by tactic type interactions. The reader should keep in mind that only the examples were presented; the examples were not labeled as to type. Appendix D contains the examples which were selected as representative of a tactic type. The highest effectiveness ratings were received by the mandate tactics in sequence number two and the tell tactics in sequence three. The lowest ratings were received by the mandate tactics in sequence four. It is interesting to note that the mandate tactics rated both high and low in different sequences. Since a subject responded to only one sequence of tactics, this difference could reflect differences in perspectives brought to the study by the subjects themselves.

Figure 7

Perceived Level of Tactic
By Stage of Adoptive Effectiveness

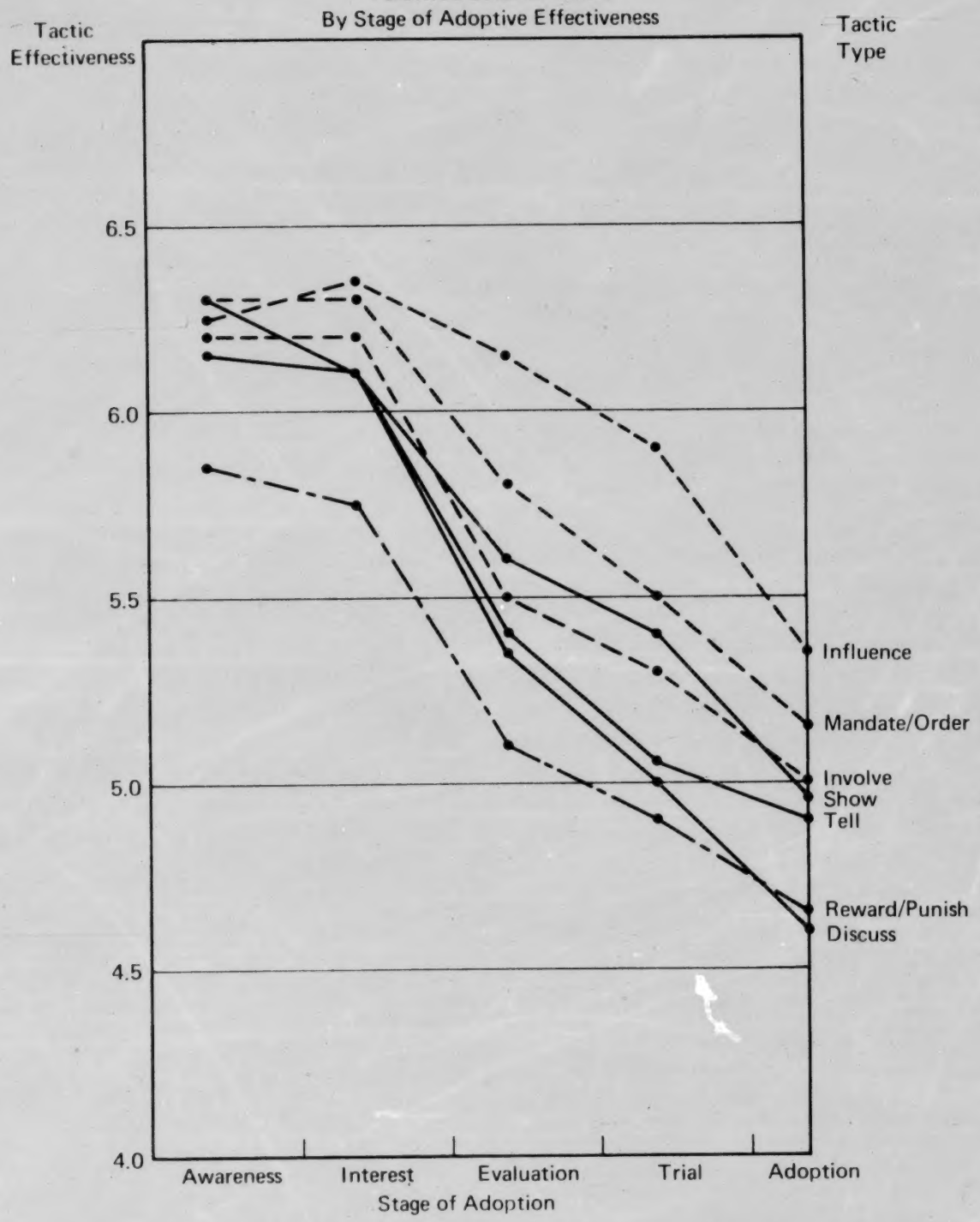


Table 17

Perceived Effectiveness of Diffusion Tactics by Sequence of Tactics

Tactic	Sequence 1 N=96	2 N=100	3 N=101	4 N=61	5 N=80	6 N=73	Total N=511
Tell							
Mean	21.72	25.66	35.54	27.15	23.12	33.32	27.75
Standard Deviation	6.39	6.08	7.07	7.81	7.21	5.89	8.50
Show							
Mean	31.94	23.27	22.13	30.66	33.24	30.66	28.17
Standard Deviation	7.84	5.87	6.55	8.10	6.58	6.25	8.17
Discuss							
Mean	32.07	25.14	28.28	26.69	26.65	23.38	27.23
Standard Deviation	5.96	6.02	6.75	6.98	6.70	6.92	7.05
Influence							
Mean	25.77	34.01	29.79	30.10	34.79	25.08	30.01
Standard Deviation	6.42	7.07	7.52	6.95	6.94	5.55	7.72
Involve							
Mean	26.62	32.44	24.29	31.30	28.82	27.14	28.27
Standard Deviation	6.19	6.30	6.20	7.90	6.68	5.86	7.06
Reward or Punish							
Mean	24.41	25.89	32.11	26.31	21.55	26.00	26.23
Standard Deviation	5.86	7.18	7.14	7.02	7.86	7.54	7.79
Mandate or Order							
Mean	31.44	35.70	27.29	20.62	27.04	28.40	29.04
Standard Deviation	6.61	7.20	6.63	5.93	6.15	6.39	7.88

Hypothesis 7. The effectiveness of diffusion tactics will be perceived differentially by the types of innovations being considered.

Innovation diffusion literature and the experience of the researchers both suggested the need to attend to unique characteristics of the innovation in the selection and use of diffusion tactics. Therefore, the design included three innovation descriptions (see Appendix A) contrived to represent different levels of factors believed to be important in the diffusion of innovations. One of the innovation descriptions was randomly assigned to each subject.

The tactic effectiveness means for the three tactic types were 200.36, 193.84, and 195.81 respectively. The researchers experienced much difficulty in translating the rather abstract items as they loaded on the factor dimensions underlying the characteristics of innovations into tangible examples of innovations which would excite teachers and administrators in local education agencies. See Appendix A for operational descriptions for each underlying dimension.

Chapter IV

Conclusions, Implications, and Recommendations

Conclusions

1. Professional staff in education at the local level can be clustered into types of client based on self-perceptions of themselves. Such clusters can be interpreted in a meaningful manner.

2. Individual demographics were not useful in associating subjects with client-type clusters. The relationships between the demographics and the client factors identified from the 1972 data set were weak. The demographics did not discriminate very well among the functions associated with the clusters in the 1974 data set.

3. Demographics associated with the subjects' membership in a state, geographic location, and role were not helpful in differentiating among the perceived effectiveness of diffusion tactics. The perceived effectiveness of diffusion tactics were almost identical by states; the perceptions of teachers and administrators located in urban, suburban, and rural communities differed only slightly.

4. Subjects classified by client-type clusters perceive the effectiveness of diffusion tactics differently. Subjects who tend to see themselves as relatively powerless to adopt or reject an innovation are likely to view diffusion tactics as relatively ineffective while subjects who identify with the role of change advocate tended to have a positive view of diffusion tactic effectiveness.

5. Professional educators in local education agencies perceive differences in the effectiveness of innovation diffusion tactics types. Tactics used to influence others were rated highest, followed closely by tactics which mandate or order the innovation, tactics which show others how to use the innovation, and tactics which communicate information about innovation. The tactics perceived as least effective were the ones which offered a reward or threatened to punish unless the innovation was adopted. The next least effective tactic type was the tactics which discuss innovation with clients.

6. The perceived effectiveness of diffusion tactics vary from one stage of adoption to another. But in general, the effectiveness of the tactics tend to decrease as the client moves closer to the adoption stage.

7. Some of the tactic types, e.g., the influence tactics, were perceived as more effective for certain stages, e.g., the interest stage, than they were for other stages. This pattern varied from tactic type to tactic type, but all of the tactic type effectiveness ratings were lowest for the adoption stage.

8. The perceived effectiveness ratings for the tactic types differ depending upon the order of the tactic examples presented to the respondent. This conclusion was unexpected; it may illustrate the sensitivity of the ratings to factors present (such as the rating of the preceding tactic) in the immediate environment of the respondent.

9. The type of innovation described did not effect the ratings of tactic effectiveness. This conclusion was a surprise to the researchers and raises questions about the utility of the innovation descriptions used in the study.

Implications

1. Potential adopters of innovations tend to perceive themselves in a consistent manner. If these self-perceptions are true, such innovation adoption behaviors are subject to use by change advocates in the formulation of innovation diffusion strategies.

2. Individual demographics which can be observed by a change advocate are not useful identifiers of self-perceived innovation adoption behavior.

3. The location of a person in an urban, suburban, or rural setting and the placement of a person in an administrative or teacher role in a school system were not good indicators of their perceptions of tactic effectiveness.

4. Clients asked to try the innovation for the first time in the school setting should be selected from individuals who are viewed by others as relatively influential in the change process.

5. Tactics which are used to influence or persuade others to accept an innovation are preferred by local education educators to other types of tactics. However, the respondents recognized the need to comply with mandates or orders from administrators in the school or a legislative authority. These respondents did not believe that thinly veiled threats or rewards would be effective in bringing about innovation adoption behavior.

6. Tactics used to diffuse innovations are perceived to be most effective during the early stages of awareness and interest. As the client becomes more involved in the evaluation and trial use of the innovation, diffusion tactics become proportionately less effective as perceived by the respondents.

7. Potential adopters of innovation can and do develop mind sets which reflect attitudes toward the desirability and perceived effectiveness of innovation diffusion tactics.

Recommendations

1. Tactics which use information to appeal to the client are likely to be welcomed. Persuasive tactics used to influence the client in certain choice situations are perceived to be effective in obtaining the diffusion of an innovation.

2. Research should continue to attempt to discover key indicators of client behavior which can be used in the formulation of effective innovation diffusion strategies.

3. Research should be conducted on the advocate's role in the innovation diffusion process. For example, little is known about the effectiveness of an outside advocate compared to an advocate who is a member of the organization.

4. The effect of mind sets towards the perceived effectiveness of diffusion tactics should be explored more fully. In particular, the influence of conditioning on the acceptability of diffusion tactics should be investigated.

5. Innovation descriptions used to stimulate the formulation of diffusion strategies should be detailed and explicit whenever possible.

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Appendix A

DATA COLLECTION INSTRUMENTS

DIFFUSION TACTICS DEVELOPMENT SURVEY

People in positions such as yours are frequently approached by persons advocating an innovation for use in your local setting. We would like to know how you classify tactics which may be used by advocates of innovations. Each tactic should be considered as a single action taken to achieve a limited objective. Your opinions will be pooled with others for a group response to identify those tactics which have been consistently classified with a particular category. Please do not place your name on the survey. We appreciate your voluntary participation in this survey.

You are being requested to classify each tactic statement by one of the following categories:

Category	Definition
Tell	Verbal or written communication which conveys information from the sender of the message to the receiver.
Show	Visual communication which conveys information from a presenter to an audience.
Discuss	An exchange of information, usually verbal, between an innovation advocate and a potential user of the innovation.
Influence	An attempt to bring about the acceptance of an innovation by appealing to values or behaviors or individuals which have been accepted by the potential user.
Involve	An attempt to associate the prospective user with the innovation in a participant role.
Offer a Reward/ Threaten to Punish	Providing incentives or establishing barriers to cause a prospective user to accept an innovation which he or she would not ordinarily accept.
Mandate or Order	An order to use the innovation issued by an authoritative source.

Please read each tactic carefully and place a check (✓) in only one column to associate the tactic with a particular category. For example:

Tactic	Tell	Show	Discuss	Influence	Involve	Offer a Reward/ Threaten to Punish	Mandate or Order
Demonstrating the innovation to a group of potential users.		✓					

Diffusion Tactics

Check one column only for each tactic:

	Tell	Show	Discuss	Influence	Involve	Offer a Reward/ Threaten to Punish	Mandate or Order
1. Endorsing the innovation through a local professional organization.							
2. Giving pay for participating in or with an innovation.							
3. Soliciting the users' support for the decision to try the innovation.							
4. Visiting a site which has installed the innovation.							
5. Conducting a pilot test of the innovation.							
6. Explaining the innovation to members of the community through conferences with the school staff.							
7. Hiring additional persons to do the less challenging tasks associated with the innovation.							
8. Endorsing the innovation through persons perceived as highly credible by the user.							
9. Providing instructional materials for trying the innovation.							
10. Conducting a strike to call attention to the need for the innovation.							
11. Informing the general public through a newspaper article.							
12. Promoting the innovation by emphasizing its positive characteristics.							
13. Providing information about the innovation in a professional journal.							
14. Providing released time to individuals to try the innovation.							
15. Replacing a key person with a less resistant individual to speed up the acceptance of the innovation.							
16. Providing information directly to the individual's supervisor if they resist the innovation.							
17. Warning individuals of the consequences of their resistance.							
18. Providing explicit instructions by the developer on how to use the innovation.							
19. Giving recognition to the person for trying the innovation.							
20. Exhorting the user to do a better job.							

	Tell	Show	Discuss	Influence	Involve	Offer a Reward/ Threaten to Punish	Mandate or Order
21. Asking persons similar to the user to support the innovation.							
22. Suggesting that an individual could lose his job for criticizing the innovation.							
23. Transferring an individual from one school to another.							
24. Allowing the user to adapt the product to local conditions.							
25. Selecting only the most interested potential users to try the innovation.							
26. Observing the innovation in operation.							
27. Providing cost and benefit data which evaluate the innovation to decision makers.							
28. Observing the effectiveness of the innovation in the local setting.							
29. Asking potential users to give their reasons for rejecting the innovation.							
30. Enacting legislation which would legally insure the use of the innovation.							
31. Discrediting the character of resistors to the innovation.							
32. Conducting boycotts.							
33. Suggesting to individuals that their association with the innovation would look good on their record.							
34. Emphasizing characteristics of the innovation which are consistent with community values.							
35. Asking persons respected by the user to present the innovation to the user.							
36. Providing information on the prior success of the innovation.							
37. Designating a person in the school building to put the innovation into practice.							
38. Answering questions about the innovation at community service organization meetings.							
39. Formation of a committee to facilitate two-way communication between the school and the community.							
40. Trying the innovation on a small scale.							

	Tell	Show	Discuss	Influence	Involve	Offer a Reward/ Threaten to Punish	Mandate or Order
41. Raising the expectations of users for the outcomes to be achieved by the innovation.							
42. Setting a time deadline for using the innovation.							
43. Emphasizing those aspects of the innovation which are consistent with what the user expects.							
44. Compelling individuals to use the innovation.							
45. Enacting a resolution to incorporate the innovation into the users' prescribed activities.							
46. Providing information about how the innovation has been used in other places.							
47. Associating the name of the developer with the innovation.							
48. Asking potential users to criticize the innovation.							
49. Requiring persons in authority to endorse the innovation.							
50. Presenting the innovation as unfinished to allow users to make it their own.							

Innovations Characteristics Questions

Individuals in positions such as yours are frequently asked to evaluate a number of innovations and recommend their acceptance to others. We would like to know the characteristics of innovations which you consider to be important when you evaluate an innovation. Your opinions will be pooled with others for a group response to identify those characteristics which are most important to decision makers in general. We are not interested in your answers as an individual; rather, we are interested in the group as a whole. Your responses to these questions will be held in strict confidence; no individual responses will be identified.

The following scale will be presented for each item in the questionnaire:

1. Not Important (NI)
2. Slightly Important (SI)
3. Moderately Important (MI)
4. Rather Important (RI)
5. Very Important (VI)

You will be asked to rate a wide range of characteristics of innovations on this five point scale. We would like to know how important these characteristics are to you when making a decision to support, accept, or reject an educational innovation. Circle the response which most accurately describes the importance of the innovation characteristic to you.

For example, the item, "HOW IMPORTANT TO YOU IS IT THAT: the innovation may allow for a more closely managed school system?" may be rated as NI (not important), SI (slightly important), MI (moderately important), RI (rather important), or VI (very important). Should you decide to rate it as being "Very Important" to you in evaluating an innovation, you would circle the appropriate answer as follows:

HOW IMPORTANT TO YOU IS IT THAT:

– the innovation may allow for a more closely managed school system? NI SI MI RI (VI)

If you have difficulty responding to any of the characteristics, feel free to write comments on the back of the pages. These comments will be taken into consideration when summarizing the results of this study.

HOW IMPORTANT TO YOU IS IT THAT:	Not Important	Slightly Important	Moderately Important	Rather Important	Very Important
1. the superintendent of schools may be against the innovation?	NI	SI	MI	RI	VI
2. the innovation save money?	NI	SI	MI	RI	VI
3. the innovation may improve students' attitudes toward school?	NI	SI	MI	RI	VI
4. teachers may object to the innovation?	NI	SI	MI	RI	VI
5. the innovation may help the student get a job?	NI	SI	MI	RI	VI
6. the innovation may point out some flaws in the past system?	NI	SI	MI	RI	VI
7. the innovation may help the student learn faster?	NI	SI	MI	RI	VI
8. the innovation can be put into practice on a step-by-step basis?	NI	SI	MI	RI	VI
9. the innovation may teach the student about himself?	NI	SI	MI	RI	VI
10. the principal may be against the innovation?	NI	SI	MI	RI	VI
11. the innovation fit smoothly into the present set-up?	NI	SI	MI	RI	VI
12. you respect the organization that produced the innovation?	NI	SI	MI	RI	VI
13. the innovation may help the student learn additional skills and ideas?	NI	SI	MI	RI	VI
14. you have confidence in the individual proposing the innovation to you?	NI	SI	MI	RI	VI
15. the general public may object to the innovation?	NI	SI	MI	RI	VI
16. the innovation may require a request for outside funds?	NI	SI	MI	RI	VI
17. the innovation may change the working relationships among teachers?	NI	SI	MI	RI	VI
18. the innovation provide evidence of its success?	NI	SI	MI	RI	VI
19. the consumer know exactly how much the innovation will cost in the long run?	NI	SI	MI	RI	VI
20. you are not the one who will be responsible if the innovation fails?	NI	SI	MI	RI	VI
21. the innovation be consistent with existing organizational policy?	NI	SI	MI	RI	VI
22. the innovation may require additional building space?	NI	SI	MI	RI	VI
23. the students can help in the development of the innovation?	NI	SI	MI	RI	VI

24.	the innovation may require additional equipment?	NI	SI	MI	RI	VI
25.	the innovation has been used successfully in school districts like yours?	NI	SI	MI	RI	VI
26.	the goals of the innovation match the community values?	NI	SI	MI	RI	VI
27.	the innovation may require additional supplies?	NI	SI	MI	RI	VI
28.	the innovation may get bad publicity?	NI	SI	MI	RI	VI
29.	the innovation may require skills not present in the existing staff?	NI	SI	MI	RI	VI
30.	funding may be available only for the initial stages of the innovation?	NI	SI	MI	RI	VI
31.	the innovation be consistent with the traditional subject matter areas?	NI	SI	MI	RI	VI
32.	the teacher may be the one who has to "sell" the innovation to the principal?	NI	SI	MI	RI	VI
33.	the innovation may require retraining of existing staff?	NI	SI	MI	RI	VI
34.	the users believe that the innovation will succeed?	NI	SI	MI	RI	VI
35.	the innovation may change the working relationships between teachers and principals?	NI	SI	MI	RI	VI
36.	the innovation may require more parent participation in the school program?	NI	SI	MI	RI	VI
37.	the innovation could be tested on a small scale before it is completely installed?	NI	SI	MI	RI	VI
38.	the innovation can be installed quickly?	NI	SI	MI	RI	VI
39.	the innovation may require new uses of existing space?	NI	SI	MI	RI	VI
40.	the teachers can help in the development of the innovation?	NI	SI	MI	RI	VI
41.	parents may object to the innovation?	NI	SI	MI	RI	VI
42.	the developers of the innovation guarantee that it will do what they say it will?	NI	SI	MI	RI	VI
43.	the innovation may require time for preparing the staff to use it?	NI	SI	MI	RI	VI
44.	the innovation get good publicity?	NI	SI	MI	RI	VI
45.	the innovation may require additional staff	NI	SI	MI	RI	VI
46.	the innovation cannot be adjusted to fit existing class schedules?	NI	SI	MI	RI	VI
47.	the innovation may require a structural change within the organization?	NI	SI	MI	RI	VI
48.	the innovation does not go over the existing budget?	NI	SI	MI	RI	VI
49.	the innovation may require that time be spent in daily or weekly planning?	NI	SI	MI	RI	VI
50.	students may object to the innovation?	NI	SI	MI	RI	VI

Biographical Information

The following information will be used as group information only for statistical analyses. Please check or complete the appropriate response for each item. You need not respond to an item which makes you feel uncomfortable.

1. Age: _____

2. Sex: Male _____ Female _____

3. Marital Status: Single_____ Divorced_____ Other_____ Married_____

4. Type of area in which you were raised:

_____ Rural (5,000 population or less)
_____ Town (more than 5,000 and less than 50,000 and not within 25 miles of a city of more than 50,000)
_____ Suburban (more than 5,000 and less than 50,000 and within 25 miles of a city of 50,000 or more)
_____ Urban (more than 50,000)

5. Income level of your present family (include both salaries if married):

_____ Less than 10,000
_____ 10,000 - 12,999
_____ 13,000 - 15,999
_____ More than 16,000

6. Educational level (indicate highest level):

_____ Certificate
_____ Bachelor's Degree
_____ Master's Degree
_____ Specialist's Degree
_____ Doctoral Degree

7. Major area studies for highest degree:

_____ Agriculture and Home Economics
_____ Arts and Humanities
_____ Biological Sciences
_____ Business and Administration
_____ Education (General)
_____ Engineering
_____ Math and Physical Science
_____ Social and Behavioral Sciences
_____ Vocational Education
_____ Professional (Dentistry, Medicine, Optometry, Law, Pharmacy, Veterinary Medicine, etc.)

8. Percentage of time spent per year in professional travel:

_____ 0 - 5% (0 - 3 weeks)
_____ 6 - 10% (4 - 6 weeks)
_____ 11 - 15% (7 - 8 weeks)
_____ 16+% (9 weeks +)

9. Percentage of time spent per year in general travel:

_____ 0 - 5% (0 - 3 weeks)
_____ 6 - 10% (4 - 6 weeks)
_____ 11 - 15% (7 - 8 weeks)
_____ 16+% (9 weeks +)

10. Number of years total experience in your profession: _____

11. Number of different organizations in which you have been employed relative to your profession:

_____ 0 - 1
_____ 2 - 3
_____ 4 - 5
_____ 6 - 7
_____ 8 - 9
_____ 10+

12. Present position (check principal position[s]):

_____ Teacher (specify subject area) _____
_____ Principal (elementary or secondary)
_____ Central Administrative (superintendents, assistant superintendents, and directors)

2. Innovations Profile

Dear Colleague:

The following three career education innovation descriptions have been written to describe situations which will require various kinds of actions in order to install them in a local school system. The descriptions are specific to the innovation and to the special client group described.

Please read the innovation description carefully. Rate each description, one at a time on each of the dimensions described. These dimensions are gross estimates of characteristics of innovations. The rating of a given innovation description on each dimension should be based on your total impression of the innovation description. It should not be the result of an isolated comment in the description. Circle the "H" or "L" on the form to indicate your rating as "High" or "Low" respectively. Please rate the innovation description as your best estimate even if you are uncertain of the relevance of the dimension to the innovation description.

Thank you for your voluntary participation in this study.

Innovation Characteristics Dimensions	Rating Scale
Dimension No. 1	
This dimension of the innovation concerns itself with the welfare of the student as a user of the innovation; does the innovation help the student learn more about himself or learn faster or learn additional information? To be rated high on this dimension an innovation must have immediate beneficial consequences for the student. A low rating means that the innovation has few if any direct, beneficial consequences for the student.	H – L
Dimension No. 2	
This dimension considers the need for additional staff, building space, money, equipment, supplies or the retraining of existing staff required by the installation of the innovation. A high rating of this dimension means that additional expertise or resources are needed to effectively use the innovation. A low rating means that little or no added expertise or resources are required.	H – L
Dimension No. 3	
This dimension focuses on the organizational changes necessary to accommodate the innovation. Within a school system, the relationship between a teacher and a principal may be affected by the innovation; more planning time may be needed to make the innovation work. A high rating on this dimension means the school will have to make significant organizational and role changes within the system to accommodate the innovation. A low rating means that no significant organizational changes will be needed to accommodate the innovation.	H – L
Dimension No. 4	
This dimension indicates the amount of resistance to the innovation which may be experienced in a given school setting. The school superintendent, principals, or teachers may be against the innovation. Organized groups such as a citizens' committee may oppose the innovation. A high rating on this dimension suggests that the innovation has qualities that would make it likely to be opposed by an organized group. A low rating means that it is unlikely to generate organized opposition.	H – L
Dimension No. 5	
This dimension considers the amount of evidence available to support the claims made for the innovation. Is the innovation likely to be successful? Do the developers stand behind the product? Has it been used successfully in similar situations? To be rated high on this dimension an innovation must have a documented history of successful past performance. To be rated low, little or no prior documents evidence of successful use of the innovation exists.	H – L

Innovation Description No. 1

This career education curriculum program is designed for high school students (grades 10 through 12) who are likely to drop out of school before graduation. The program's objectives are: (1) to increase the student's self-understanding of his or her abilities for career opportunities, (2) to develop skills in the student which lead to gainful employment in later years, and (3) to increase the student's awareness of career opportunities. The instructional materials provided for the course include the following:

1. A series of units (with resource kits) designed to coordinate work experience skills needed with subject matter from the student's other classes. These units contain behavioral objectives and sample unit tests. The resource kits include filmstrips, transparencies, simulation and gaming activities.

2. An introductory unit which introduces the student to concepts of career guidance and explains the objectives of the program through a self-instructional technique.

3. The program planning guide for the instructor/coordinator of the course which includes a list of social and business agencies likely to participate in this program, an inventory of characteristics which tend to identify students likely to drop out of school, and suggested procedures for implementing the program in a high school.

In order to implement this program, a clear delineation of roles must be established within the high school. Classroom teachers would be required to infuse materials from the resource kits into their regular curriculum. Guidance counselors would be responsible for providing career counseling to students. A coordinator's position would be established to coordinate the program with employers and supervise students in their work stations. In a small high school, one individual could be required to fill all three roles.

Once a student was identified through the use of the inventory of characteristics as a potential dropout, he or she would be permitted to schedule classes according to their work station demands.

The initial cost of the program would be minimal. A brief inservice education program would be provided by the developers as a cost free service for guidance counselors and/or teachers responsible for the instructional and supervisory aspects of the program. Existing staff (either guidance counselors or teachers) would be used to coordinate the school program with activities in businesses and industry.

This program was developed in an urban high school with 50 students in the program. The materials have been tried out in ten other high schools ranging from schools with a 450 student population to schools with 2000 student population in grades 10 through 12. The instructional materials have been revised twice, once following the first year of the development cycle and again following the use of the materials in the ten high schools. Students participating in this work study program stayed in school longer, had better attitudes, and performed as well in their academic studies as similar students in traditional programs. Approximately half of the students increased their rate of learning significantly during the first year they participated in the program.

Innovation Description No. 2

This program of inservice education activities has been developed for high school teachers who are being asked to incorporate career education concepts into their courses for the first time. Its purpose is to introduce them to these concepts and assist them in developing resource kits to supplement instruction of the concepts in their classes.

Each department within a high school (e.g., Math, Science, Social Science, Vocational Education, English, etc.) will be required to select one or two teachers to attend at least three workshops during the regular school year. These workshops will be held at a university setting. Each of the three required sessions will last two weeks long. The participating high schools will finance the workshops including tuition, mileage, materials, lodging, and board for the teachers. They will also provide substitute teachers during regular school hours while the teachers are attending the workshops. Regular university faculty members will teach the courses and graduate credits will be awarded for their successful completion.

During their studies in these workshops, teachers will be exposed to career education concepts and hopefully will become convinced of the need for career education in their school systems. Career development theory and problem solving skills will be taught during the workshops. The focus of the program is on the teacher (not the student) as a manager of the learning process. In this role, program participants will be asked to develop resource kits to supplement instruction of the career education concepts. No evidence exists to support or refute claims made for the outcomes from the instruction.

Although the university professors are experienced staff members, no contractual arrangements exist to assure the implementation of the concepts in school systems. Building principals are responsible for determining the impact of these workshops upon the regular classroom instructional programs of their teachers.

Innovation Description No. 3

This educational program is designed for comprehensive high schools (grades 9-12). The main objective of the program is to assist a high school faculty in more effectively and systematically identifying, structuring, implementing and evaluating a career guidance program. This program will enable school and community personnel (teachers, administrators, students, and parents) to establish alternative means of providing better career guidance for students. The program is designed to accomplish this within the existing resources of a particular school setting.

The program is a self-instructional package which includes: (1) procedures and instruments for identifying student needs; (2) procedures for identifying existing resources (instructional materials and professional employees) within a school setting; (3) procedures for monitoring traditional and modern curriculum offerings; (4) procedures for establishing greater participatory involvement between teachers, students, administrators, and parents; and (5) procedures for creating alternate units for implementing the objectives which are identified through the needs assessment process.

There are not pre-determined outcomes identified from the program other than its ability to make more individuals accountable to the teaching/learning process. The approach is completely flexible and built to fit into the existing structure of most comprehensive high schools.

One unique aspect of this program is a steering committee consisting of representatives from administrators, parents, business/industry personnel, teachers, and students. This committee makes the final decisions concerning the administration of the program. No units are implemented without the approval of this committee.

The program has been tested on a national level. The preliminary results indicate a positive commitment by those involved. Some schools are now introducing new courses such as marine biology, oceanography, and space travel to accommodate the varing needs of their student population.

The initial cost of the program consisting of a self-instructional packet of materials is minimal ($400). Included within the $400 outlay is the fee for one consultation meeting on any area which the school deems necessary.

3. Tactics Effectiveness Survey

Instructions:

In this section, an educational material or practice is described. We would like you to rate the effectiveness of each of 14 tactics in each of five different situations. These situations, are in effect, states in the process of accepting, using, or rejecting an educational material or practice.

The five stages of the acceptance process are:

1. AWARENESS - You are exposed to the innovation but lack complete information about it. Your interest is passive and you don't necessarily seek information about it.

2. INTEREST - You actively seek additional information about the innovation; however, you have yet to judge its utility in relation to your own situation.

3. EVALUATION - You mentally apply the innovation to your present and anticipated future situation. You then decide whether or not to try it.

4. TRIAL - You use the innovation on a small scale in order to determine its utility in your own situation.

5. ADOPTION - You decide to use the innovation permanently on a full scale.

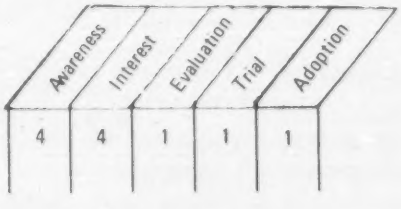
Please rate the effectiveness of each tactic according to the following scale:

Not Effective	1
Slightly Effective	2
Moderately Effective	3
Very Effective	4
Extremely Effective	5

We would like to know how effective you think each of the tactics would be in convincing people in positions such as yours to adopt the innovation described on the colored insert in each of the five stages of adoption. For example, how effective do you think it would be to advertise an innovation on local television stations? Should you decide to rate this tactic as "very effective" during the awareness and interest stages, but "not effective" during the remaining three stages, you might mark the following responses on this questionnaire:

EXAMPLE:

1. The innovation is advertised on local television stations



Please mark one effectiveness rating for each tactic in each stage of the adoption process noted at the right.

Effectiveness Rating
1 - Not Effective
2 - Slightly Effective
3 - Moderately Effective
4 - Very Effective
5 - Extremely Effective

TACTICS	Stages of Acceptance: Awareness	Interest	Evaluation	Trial	Adoption
1. Enacting legislation which would legally insure the use of the innovation.					
2. Observing the innovation in operation.					
3. Informing the general public through a newspaper article.					
4. Allowing the user to adapt the product to local conditions.					
5. Asking potential users to give their reasons for rejecting the innovation.					
6. Visiting a site which has installed the innovation.					
7. Asking persons similar to the user to support the innovation.					
8. Giving recognition to the person for trying the innovation.					
9. Conducting a pilot test of the innovation.					
10. Answering questions about the innovation at community service organization meetings.					
11. Compelling individuals to use the innovation.					
12. Asking persons respected by the user to present the innovation to the user.					
13. Suggesting that an individual could lose his job for criticizing the innovation.					
14. Providing information about the innovation in a professional journal.					

4. Professional Opinion Survey

Instructions:

On the following pages are a series of questions about various aspects of your profession. We are interested in your opinions about situations which may arise in your daily activities.

We are trying to study the pressures and conditions with which most decision makers have to work. We would like you to respond on the basis of your feelings toward each statement. For instance, if you strongly agree with a statement, you would indicate so by circling the letters SA (strongly agree). If you strongly disagree, you would circle SD (strongly disagree).

Please answer each item as frankly as you can. Your first impression is usually best, so do not spend too much time on any one item. Please feel free to comment on the questionnaire. These comments will be taken into consideration when summarizing the results of this study.

The scale is as follows:

SD	Strongly Disagree
D	Disagree
U	Uncertain
A	Agree
SA	Strongly Agree

Please circle your response. For example: SD D (U) A SA

1.	When trying something new, I will usually rely on my own judgments as to how it should work or be used rather than relying on the general instructions.	SD	D	U	A	SA
2.	I very seldom use a new idea or product without altering it to meet my needs.	SD	D	U	A	SA
3.	I often try something new even if there is a good chance that it will not work.	SD	D	U	A	SA
4.	I would rather develop my own materials, given the time, than to use some pre-developed methods.	SD	D	U	A	SA
5.	Professional tools are necessary to the accomplishment of my task.	SD	D	U	A	SA

6.	I work well in a competitive atmosphere.	SD	D	U	A	SA
7.	I use most of the mechanical and electronic aides related to my professional task that are available to me.	SD	D	U	A	SA
8.	Extensive preparation is the key to success in the accomplishment of an important task.	SD	D	U	A	SA
9.	I enjoy working in situations which put me in a position of leadership and responsibility.	SD	D	U	A	SA
10.	I am usually seen as a hard worker.	SD	D	U	A	SA
11.	If change related to my task is suggested, my primary concern is how much does it cost.	SD	D	U	A	SA
12.	I enjoy creating distinctively different techniques or ways of doing things.	SD	D	U	A	SA
13.	If change related to my task requires extra time on my part, I would expect compensation.	SD	D	U	A	SA
14.	I find that it is best to pool my judgments with my superiors rather than making decisions on my own.	SD	D	U	A	SA
15.	The main barrier to change is not a lack of good, new ideas, but gaining funds to support those ideas.	SD	D	U	A	SA
16.	When faced with a decision, I tend to rely primarily on hard evidence related to the alternatives.	SD	D	U	A	SA
17.	Administrators are better qualified than non-administrative personnel to evaluate work performance.	SD	D	U	A	SA
18.	To receive money for something I do well is often more important to me than to receive approval from my peers.	SD	D	U	A	SA
19.	Education should be run more like a business.	SD	D	U	A	SA
20.	I will usually comply with a school board or legislative change, whereas change suggested by superiors I am willing to question.	SD	D	U	A	SA
21.	The problem with trying new practices is that you are expected to do the whole thing by yourself.	SD	D	U	A	SA

22.	I have little faith in policies which I have not been instrumental in forming.	SD	D	U	A	SA
23.	When I make a decision, I consider the risk involved to myself as well as organizational goals.	SD	D	U	A	SA
24.	Statistical evidence may be important, but it is not practical for the decisions I have to make each day.	SD	D	U	A	SA
25.	People consider me easy going.	SD	D	U	A	SA
26.	Though I seek for information, I often rely on my own instincts and judgments rather than insisting on hard evidence.	SD	D	U	A	SA
27.	The only kind of change I will accept is that which has been tested and proven by others to be better.	SD	D	U	A	SA
28.	When I work with other people, I prefer it to be in an informal manner.	SD	D	U	A	SA
29.	Knowing the right people in the organization is more important than rational discussions when I am trying to get a decision to go my way.	SD	D	U	A	SA
30.	Even if things are going well, people still try to change them.	SD	D	U	A	SA
31.	When a decision has to be made, I find it most efficient to go through the standard channels or procedures.	SD	D	U	A	SA
32.	I just try to do a good job and avoid all the pressures around me.	SD	D	U	A	SA
33.	Often, my ideas are reinterpreted by my superiors so that I do not receive credit for them.	SD	D	U	A	SA
34.	Because my training was basically in general principles and not in techniques, I often find it difficult to relate to the technical aspects of proposed changes.	SD	D	U	A	SA
35.	My approach to innovations is most often to play it slow and sure.	SD	D	U	A	SA
36.	Timing is the most important fact in all decisions I am called upon to make.	SD	D	U	A	SA
37.	I find compromise difficult in most situations.	SD	D	U	A	SA

38.	I find I can accomplish more working alone than working with my colleagues on a problem.	SD	D	U	A	SA
39.	I am dismayed when I see people using new practices which have no research evidence to support them.	SD	D	U	A	SA
40.	Very seldom do I have the resources to accomplish the tasks related to my role.	SD	D	U	A	SA
41.	If a position is open in our organization and a qualified professional person is not available, it should be permissable to hire a less qualified individual.	SD	D	U	A	SA
42.	I try to bend the rules of the organization in which I am employed so as to match the situation.	SD	D	U	A	SA
43.	I find it is always better to rely on research-based evidence rather than on intuition judgment if the research is available.	SD	D	U	A	SA
44.	When I have put in a day's work, I most often do not concern myself with work-related problems in the evening.	SD	D	U	A	SA
45.	I keep abreast of current developments in my professional field.	SD	D	U	A	SA
46.	I adhere closely to the policies and rules of the organization in which I am employed.	SD	D	U	A	SA
47.	The economic efficiency in any practice is as important as the moral implications of the practice.	SD	D	U	A	SA
48.	I accomplish much more if I work in an environment where there are standard regulating procedures.	SD	D	U	A	SA
49.	I often find myself working on necessary tasks related to my role after normal working hours.	SD	D	U	A	SA
50.	The best way for me to advance myself in my present position is to frequently suggest changes.	SD	D	U	A	SA

Biographical Information

The following information will be used as group information only for statistical analyses. Please check or complete the appropriate response for each item. You need not respond to an item which makes you feel uncomfortable.

1. Age: _____

2. Sex: Male _____ Female _____

3. Marital Status: Single_____ Divorced_____ Other_____ Married_____

4. Type of area in which you were raised:

   _____ Rural (5,000 population or less)
   _____ Town (more than 5,000 and less than 50,000 and not within 25 miles of a city of more than 50,000)
   _____ Suburban (more than 5,000 and less than 50,000 and within 25 miles of a city of 50,000 or more)
   _____ Urban (more than 50,000)

5. Income level of your present family (include both salaries if married):

   _____ Less than 10,000
   _____ 10,000 - 12,999
   _____ 13,000 - 15,999
   _____ More than 16,000

6. Educational level (indicate highest level):

   _____ Certificate
   _____ Bachelor's Degree
   _____ Master's Degree
   _____ Specialist's Degree
   _____ Doctoral Degree

7. Major area studies for highest degree:

   _____ Agriculture and Home Economics
   _____ Arts and Humanities
   _____ Biological Sciences
   _____ Business and Administration
   _____ Education (General)
   _____ Engineering
   _____ Math and Physical Science
   _____ Social and Behavioral Sciences
   _____ Vocational Education
   _____ Professional (Dentistry, Medicine, Optometry, Law, Pharmacy, Veterinary Medicine, etc.)

8. Percentage of time spent per year in professional travel:

   _____ 0 - 5% (0 - 3 weeks)
   _____ 6 - 10% (4 - 6 weeks)
   _____ 11 - 15% (7 - 8 weeks)
   _____ 16+% (9 weeks +)

9. Percentage of time spent per year in general travel:

   _____ 0 - 5% (0 - 3 weeks)
   _____ 6 - 10% (4 - 6 weeks)
   _____ 11 - 15% (7 - 8 weeks)
   _____ 16+% (9 weeks +)

10. Number of years total experience in your profession: _____

11. Number of different organizations in which you have been employed relative to your profession:

    _____ 0 - 1
    _____ 2 - 3
    _____ 4 - 5
    _____ 6 - 7
    _____ 8 - 9
    _____ 10+

12. Present position (check principal position[s]):

    _____ Teacher (specify subject area)_____
    _____ Principal (elementary or secondary)
    _____ Central Administrative (superintendents, assistant superintendents, and directors)

Appendix B

Re-Analysis of 1972 Data

Factor 1. Student-User Concern Orientation

ITEM	FACTOR RANKED LOADINGS	ITEM CONTENT
3	21.64	the innovation may improve students' attitudes toward school?
7	19.43	the innovation may help the student learn faster?
13	19.01	the innovation may help the student learn additional skills and ideas?
9	17.77	the innovation may teach the student about himself?
34	16.62	the users believe that the innovation will succeed?
5	15.49	the innovation may help the student get a job?
40	14.59	the teachers can help in the development of the innovation?
31	14.27	the innovation be consistent with the traditional subject matter areas?
18	13.62	the innovation provide evidence of its success?
23	12.68	the students can help in the development of the innovation?

Factor 2. Additional Resource Requirements

ITEM	FACTOR RANKED LOADINGS	ITEM CONTENT
45	11.86	the innovation may require additional staff?
22	11.06	the innovation may require additional building space?
33	10.60	the innovation may require retraining of existing staff?
48	10.19	the innovation does not go over the existing budget?
24	9.95	the innovation may require additional equipment?
27	9.54	the innovation may require additional supplies?
16	9.45	the innovation may require a request for outside funds?
29	8.93	the innovation may require skills not present in the existing staff?
30	8.61	funding may be available only for the initial stages of the innovation?
43	6.65	the innovation may require time for preparing the staff to use it?

Factor 3. Organization Operation

ITEM	FACTOR RANKED LOADINGS	ITEM CONTENT
6	11.36	the innovation may point out some flaws in the past system?
35	10.27	the innovation may change the working relationships between teachers and principals?
39	9.57	the innovation may require new uses of existing space?
47	9.26	the innovation may require a structural change within the organization?
46	8.33	the innovation cannot be adjusted to fit existing class schedules?
49	7.93	the innovation may require that time be spent in daily or weekly planning?
36	7.73	the innovation may require more parent participation in the school program?
32	7.29	the teacher may be the one who has to "sell" the innovation to the principal?
43	7.12	the innovation may require time for preparing the staff to use it?
21	7.08	the innovation be consistent with existing organizational policy?

Factor 4. Organized Resistance

ITEM	FACTOR RANKED LOADINGS	ITEM CONTENT
10	13.20	the principal may be aginst the innovation?
1	12.09	the superintendent of schools may be aginst the innovation?
15	7.82	the general public may object to the innovation?
4	7.78	teachers may object to the innovation?
14	6.20	you have confidence in the individual proposing the innovation to you?
12	5.93	you respect the organization that produced the innovation?
28	5.89	the innovation may get bad publicity?
26	5.16	the goals of the innovation match the community values?
44	5.12	the innovation get good publicity?
50	5.09	students may object to the innovation?

Factor 5. Warrantee Evidence

ITEM	FACTOR RANKED LOADINGS	ITEM CONTENT
42	10.52	the developers of the innovation guarantee that it will do what they say it will?
19	8.97	the consumer know exactly how much the innovation will cost in the long run?
37	7.99	the innovation could be tested on a small scale before it is completely installed?
25	7.79	the innovation has been used successfully in school districts like yours?
18	7.56	the innovation provide evidence of its success?
26	6.84	the goals of the innovation match the community values?
30	6.44	funding may be available only for the initial stages of the innovation?
44	6.22	the innovation get good publicity?
5	6.19	the innovation may help the student get a job?
28	6.16	the innovation may get bad publicity?

2. 1974 Replication of Innovation Characteristics Factors

Factor 1. Resistance

ITEM	FACTOR RANKED LOADINGS	ITEM CONTENT
1	31.21	the superintendent of schools may be against the innovation?
10	28.81	the principal may be aginst the innovation?
3	27.41	the innovation may improve students' attitudes toward school?
13	25.70	the innovation may help the student learn additional skills and ideas?
50	25.42	students may object to the innovation?
4	25.31	teachers may object to the innovation?
40	25.11	the teachers can help in the development of the innovation?
15	24.59	the general public may object to the innovation?
41	24.35	parents may object to the innovation?

1974 Replication of Innovation Characteristics Factors

Factor 2. Operational Implementation

ITEM	FACTOR RANKED LOADINGS	ITEM CONTENT
33	25.86	the innovation may require retraining of existing staff?
39	23.88	the innovation may require new uses of existing space?
43	23.39	the innovation may require time for preparing the staff to use it?
29	23.31	the innovation may require skills not present in the existing staff?
30	23.02	funding may be available only for the initial stages of the innovation?

1974 Replication of Innovation Characteristics Factors

Factor 3. Student-User Concern Orientation

ITEM	FACTOR RANKED LOADINGS	ITEM CONTENT
7	29.20	the innovation may help the student learn faster?
3	29.16	the innovation may improve students' attitudes toward school?
9	28.65	the innovation may teach the student about himself?
40	27.18	the teachers can help in the development of the innovation?
5	26.97	the innovation may help the student get a job?
23	25.38	the students can help in the development of the innovation?
6	24.94	the innovation may point out some flaws in the past system?

1974 Replication of Innovation Characteristics Factors

Factor 4. Probability of Success

ITEM	FACTOR RANKED LOADINGS	ITEM CONTENT
14	22.38	you have confidence in the individual proposing the innovation to you?
37	20.80	the innovation could be tested on a small scale before it is completely installed?
34	20.56	the users believe the innovation will succeed?
12	20.38	you respect the organization that produced the innovation?
42	19.60	the developers of the innovation guarantee that it will do what they say it will?
18	19.25	the innovation provide evidence of its success?

1974 Replication of Innovation Characteristics Factors

Factor 5. Resource Requirements

ITEM	FACTOR RANKED LOADINGS	ITEM CONTENT
46	22.83	the innovation cannot be adjusted to fit existing class schedules?
48	21.56	the innovation does not go over the existing budget?
19	20.98	the consumer know exactly how much the innovation will cost in the long run?
22	20.81	the innovation may require additional building space?
16	19.70	the innovation may require a request for outside funds?

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Appendix C

SAMPLE STATISTICS

Table C 1

Tactics Development Survey Respondents by State and Location

September 1973

State	Urban	Suburban	Rural	Total
No. 1	16	16	17	49
No. 2	16	14	18	48
No. 3	17	0	12	29
Totals	49	30	47	126

Table C 2

Distribution of Subjects by State, Location, and Role

	Urban	Suburban	Rural	Total	
State No. 1					
Teacher	43	42	44	129	
Principal	15	17	11	43	
Central Administrator	28	22	9	59	
Sub-total					231
State No. 2					
Teacher	26	39	24	89	
Principal	17	19	12	48	
Central Administrator	18	15	4	37	
Sub-total					174
State No. 3					
Teacher	104	–	–	104	
Principal	2	–	–	2	
Central Administrator	–	–	–	–	
Sub-total					106
Totals	253	154	104	511	

Table C 3

Distribution of Subjects by Innovation Type, Client Type, and Role

Client Type	Innovation Type 1	2	3	Total
1.				
Teacher	44	51	53	148
Principal	25	18	17	60
Central Administrator	20	16	24	60
2.				
Teacher	17	15	13	45
Principal	2	5	0	7
Central Administrator	0	1	0	1
3.				
Teacher	12	8	12	32
Principal	2	0	1	3
Central Administrator	4	0	1	5
4.				
Teacher	9	8	8	25
Principal	2	3	2	7
Central Administrator	3	1	1	5
5.				
Teacher	12	10	5	27
Principal	3	1	3	7
Central Administrator	2	6	3	11
6.				
Teacher	4	10	5	19
Principal	1	2	3	6
Central Administrator	1	1	3	5
7.				
Teacher	6	11	9	26
Principal	0	2	1	3
Central Administrator	4	1	4	9
TOTAL				
Teacher	104	113	105	322
Principal	35	31	27	93
Central Administrator	34	26	36	96
	173	170	168	511

Note: The interactions tested in the analysis contain no empty cells. All cells have a frequency of at least one subject.

Appendix D

CLASSIFICATION OF TACTIC EXAMPLES

Table D 1

Number of Times Tactic Examples were Classified as One of Seven Tactic Types

Example	Tactic Type: Tell	Show	Discuss	Influence	Involve	Offer a Reward/ Threaten to Punish	Mandate or Order
1. Endorsing the innovation through a local professional organization.	12	13	20	57	22	0	2
2. Giving pay for participating in or with an innovation.	9	1	8	13	7	85	3
3. Soliciting the users' support for the decision to try the innovation.	7	6	23	44	42	2	0
4. Visiting a site which has installed the innovation.	2	(89)	10	8	16	0	1
5. Conducting a pilot test of the innovation.	6	26	8	8	(73)	1	4
6. Explaining the innovation to members of the community through conferences with the school staff.	38	11	48	9	19	0	0
7. Hiring additional persons to do the less challenging tasks associated with the innovation.	6	4	11	15	34	32	21
8. Endorsing the innovation through persons perceived as highly credible by the user.	11	7	7	85	10	5	1
9. Providing instructional materials for trying the innovation.	9	27	5	17	26	34	4
10. Conducting a strike to call attention to the need for the innovation.	5	6	5	31	9	45	25
11. Informing the general public through a newspaper article.	(86)	14	2	17	4	1	1
12. Promoting the innovation by emphasizing its positive characteristics.	23	14	11	67	4	5	0
13. Providing information about the innovation in a professional journal.	(69)	10	6	34	6	0	0

Example	Tell	Show	Discuss	Influence	Involve	Offer a Reward/ Threaten to Punish	Mandate or Order
	Tactic Type						
14. Providing released time to individuals to try the innovation.	3	3	5	19	33	61	0
15. Replacing a key person with a less resistant individual to speed up the acceptance of the innovation.	1	0	5	38	10	36	33
16. Providing information directly to the individual's supervisor if they resist the innovation.	5	2	7	13	3	77	19
17. Warning individuals of the consequences of their resistance.	5	1	4	5	4	98	9
18. Providing explicit instructions by the developer on how to use the innovation.	59	26	15	7	11	4	4
19. Giving recognition to the person for trying the innovation.	2	2	0	14	2	(104)	1
20. Exhorting the user to do a better job.	9	2	7	37	5	46	14
21. Asking persons similar to the user to support the innovation.	41	1	8	(87)	20	3	2
22. Suggesting that an individual could lose his job for criticizing the innovation.	2	0	4	1	1	(104)	13
23. Transferring an individual from one school to another.	2	0	3	15	11	53	38
24. Allowing the user to adapt the product to local conditions.	2	4	10	13	(89)	4	1
25. Selecting only the most interested potential users to try the innovation.	3	4	8	57	36	10	5
26. Observing the innovation in operation.	0	(82)	5	10	27	1	1
27. Providing cost and benefit data which evaluate the innovation to decision makers.	28	23	16	34	14	9	1
28. Observing the effectiveness of the innovation in the local setting.	1	73	12	14	24	1	0
29. Asking potential users to give their reasons for rejecting the innovation.	9	4	(73)	10	29	1	0
30. Enacting legislation which would legally insure the use of the innovation.	2	0	3	9	8	2	(102)
31. Discrediting the character of resistors to the innovation.	1	1	4	24	1	92	2
32. Conducting boycotts.	2	3	1	17	12	62	26
33. Suggesting to individuals that their association with the innovation would look good on their record.	0	2	5	51	3	63	1

Example	Tactic Type: Tell	Show	Discuss	Influence	Involve	Offer a Reward/ Threaten to Punish	Mandate or Order
34. Emphasizing characteristics of the innovation which are consistent with community values.	7	6	11	86	11	3	0
35. Asking persons respected by the user to present the innovation to the user.	4	12	5	(92)	11	1	0
36. Providing information on the prior success of the innovation.	35	29	18	41	1	1	0
37. Designating a person in the school building to put the innovation into practice.	10	8	1	12	43	1	50
38. Answering questions about the innovation at community service organization meetings.	24	7	(69)	12	13	0	0
39. Formation of a committee to facilitate two-way communication between the school and the community.	2	3	42	18	61	0	0
40. Trying the innovation on a small scale.	3	32	7	13	66	1	1
41. Raising the expectations of users for the outcomes to be achieved by the innovation.	8	7	7	59	10	32	2
42. Setting a time deadline for using the innovation.	7	2	4	11	4	12	82
43. Emphasizing those aspects of the innovation which are consistent with what the user expects.	12	7	11	82	5	5	3
44. Compelling individuals to use the innovation.	2	0	3	5	2	6	(107)
45. Enacting a resolution to incorporate the innovation into the users' prescribed activities.	4	1	9	5	11	3	92
46. Providing information about how the innovation has been used in other places.	52	30	10	29	4	0	1
47. Associating the name of the developer with the innovation.	18	8	3	75	14	8	0
48. Asking potential users to criticize the innovation.	9	1	55	16	44	1	0
49. Requiring persons in authority to endorse the innovation.	0	0	4	24	5	1	92
50. Presenting the innovation as unfinished to allow users to make it their own.	1	8	6	11	91	8	1

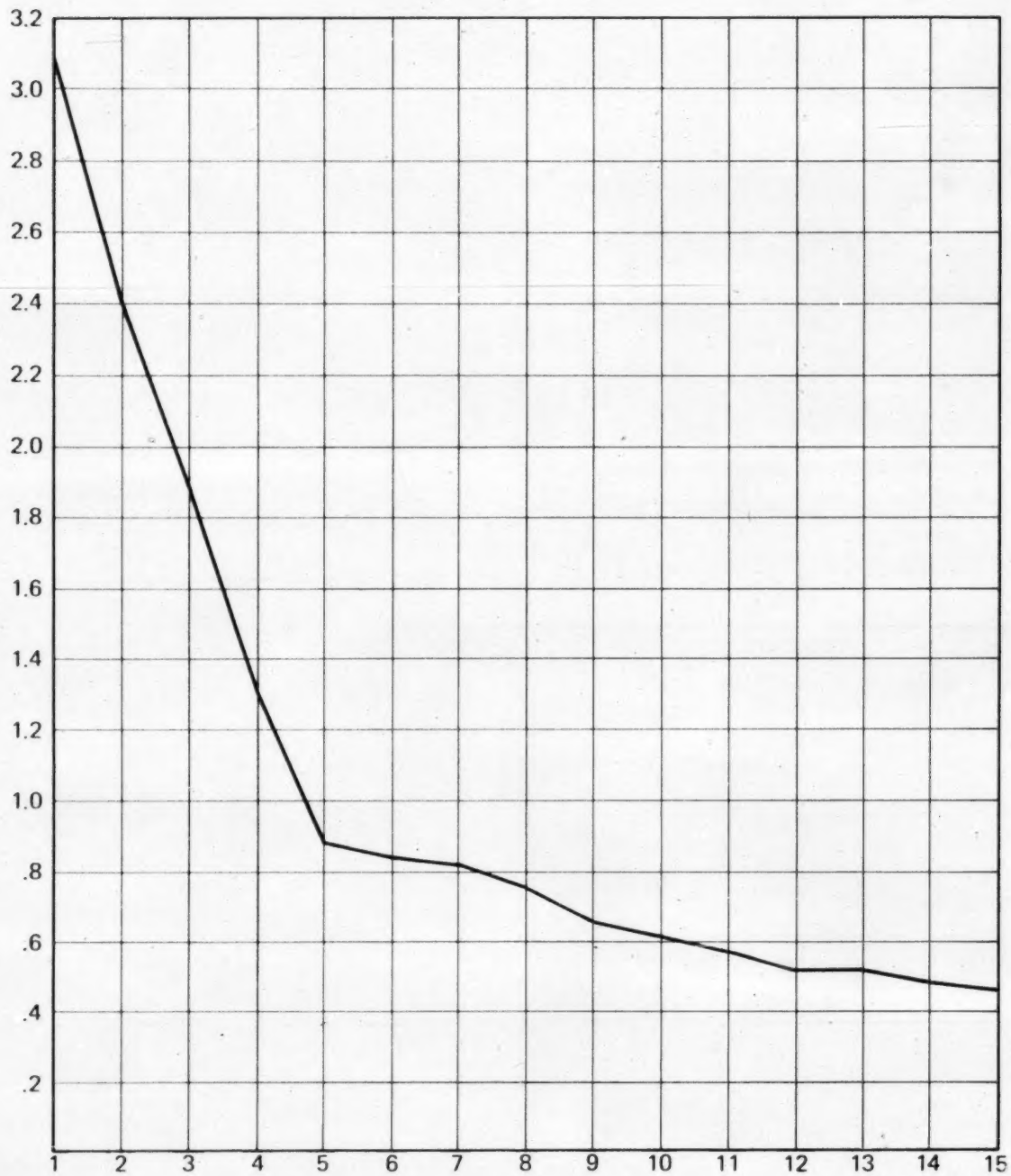
Appendix E

STATISTICAL TABLES AND CHARTS

1. Test-Retest Reliability Coefficients for Diffusion Tactic Examples and Stages of Adoption

	Tactic Example	Reliability Coefficient
1.	(tell)	.57
2.	(tell)	.45
3.	(show)	.42
4.	(show)	.59
5.	(discuss)	.74
6.	(discuss)	.50
7.	(influence)	.61
8.	(influence)	.54
9.	(involve)	.54
10.	(involve)	.61
11.	(reward or punish)	.42
12.	(reward or punish)	.62
13.	(mandate or order)	.45
14.	(mandate or order)	.33
	Stage of Adoption	
1.	Awareness	.69
2.	Interest	.56
3.	Evaluation	.47
4.	Trial	.55
5.	Adoption	.52

2. Eigenvalue Chart of the Factor Analysis on the Professional Opinion Survey Data



3. Orthogonally Rotated Five Factor Solution of the Professional Opinion Survey Data

Item Number	1	2	3	4	5
1	.20	-.21	-.16	.40	.11
2	-.04	-.08	.06	.24	.17
3	.14	-.17	.23	.08	.04
4	.06	-.06	.05	.12	.18
5	.00	-.04	.28	-.21	.03
6	.09	.04	.05	.15	.42
7	-.04	.02	.33	.09	.09
8	.00	.12	.36	-.08	.05
9	.13	-.06	.06	.06	.57
10	.01	.07	.25	.04	.36
11	.29	.19	.15	.03	.02
12	.07	.25	.42	.04	.24
13	.40	.08	.01	.05	-.17
14	.04	.35	.05	-.10	-.17
15	.42	.10	.21	.06	.05
16	.20	.32	-.00	.10	.10
17	-.00	.31	-.10	-.21	.00
18	.42	-.08	-.15	-.05	-.05
19	.31	.07	-.09	-.18	.14
20	.25	.04	.11	.12	.08
21	.45	.00	-.02	.18	-.01
22	.37	-.10	-.11	.08	.11
23	.08	.11	.22	.08	-.10
24	.08	-.06	.01	.36	-.05
25	.07	.00	-.10	.30	-.15
26	-.07	-.15	.05	.49	.02
27	.36	.19	.00	-.09	-.23
28	.07	.02	.10	.31	-.05
29	.37	-.09	-.13	.09	.11
30	.26	.00	.08	.04	-.03
31	-.10	.50	.06	-.18	.02
32	.24	.21	-.10	.28	-.16
33	.38	-.03	.14	.16	.02
34	.21	.10	-.13	.23	-.28
35	.14	.46	-.12	.13	-.07
36	.26	.14	-.04	.13	.12
37	.28	-.02	-.11	.02	.03
38	.19	-.18	-.07	.31	.05
39	.37	.24	-.45	-.19	-.04
40.	.47	-.07	.08	.07	-.26
41	.06	-.05	-.02	.00	-.20
42	.21	-.37	-.06	.12	-.05
43	.14	.36	.17	-.29	.05
44	.25	-.07	-.42	-.14	-.04
45	.00	.05	.35	-.07	.23
46	-.11	.55	.17	.09	.24
47	.34	.16	.07	.00	.03
48	.11	.37	.09	.03	-.00
49	-.18	.05	.53	.24	.04
50	.38	.05	.11	-.00	.05

Appendix F

Development of the Items for the Professional Opinion Survey
(formerly the Professional Organizational Image Inventory)

Generation of POII

The fifty (50) items of the Professional Organizational Image Inventory were generated to measure perception of educational practitioners as professionals and employees of organizations. These perceptions were in the form of items indicating behaviors related to the individual functioning in these two roles. A process that involved both systematic and intuitive elements was used to generate the items. The use of the term "analysis" in the following discussion will mainly refer to a process of reading and rationally and/or intuitively deriving conclusions on that basis. In some cases, specific criteria were applied, in which case, they are stated.

An initial set of 1,000 items was primarily generated through several readings of Brickell's ten images of educational practitioners (Brickell, 1971) and then writing statements that would be consistent with the ten images. In many cases, the items are paraphrases of the statements made by Brickell. A brief summary of the ten Brickell images is given below:

Image Number 1 – This practitioner, a "creature of regulation: is able to control those below him better than those above him in the organization." "His energy level and work output are low." He is secure in his position and is striving for promotion. He responds quicker to legislative action than to administrative action. He is difficult to reach, either personally or monetarily from outside the organization.

Image Number 2 – This practitioner is achievement-oriented. His "reward is the sense of forward movement." He is sociable, works long hours, makes decisions quickly, and "trusts his own judgment over hard evidence." He is easily reached from outside the organization.

Image Number 3 – This practitioner is professionally oriented, and thus maintains professional codes of conduct. He keeps informed, continues his own education, is concerned about his clients, and demonstrates leadership abilities. Any change that is to be accepted by him must be in keeping with existing professional norms. "His chief reward is the recognition and respect of others, especially the leaders." He is energetic, secure in his position, and best persuaded by "the wisdom of his teachers."

Image Number 4 – This practitioner is "interested in the uses of power and seeks positions which will allow him to exercise it." He is very conscious of formal and informal relations between persons in the organizational setting and "relies very heavily on his own instincts and his personal sense of timing in making decisions." He is very energetic. He is very responsive to those closely associated with him and is "most seriously threatened by the prospect of losing" their support.

Image Number 5 – This practitioner is oriented to the technical end of his position. He relies on "his professional tools to give substance and method to his work." He is not creative in his use of the tools, but uses them strictly as they were designed. He is not extremely energetic. His work habits are "quite stable" and he gives up those habits only reluctantly.

Image Number 6 – This practitioner is relatively powerless to operate beyond a limited, well-defined scope of activity. He has a "limited repertoire of techniques," and has had general education as opposed to specific technique training. He has low energy level and is noncompetitive. He will ask for help, but requires specific guidance for any change attempt.

Image Number 7 – This practitioner is continually concerned about the lack of funds to accomplish his goals. He has the skill and energy to accomplish his goals when able to acquire sufficient funding (i.e., his present funds are allocated and cannot be "reassigned without disrupting the system and triggering counter pressures both from inside and outside the institution–pressures he may not be able to withstand").

Image Number 8 – This practitioner is very advanced in his skills and "takes pride in using his skill." He does not necessarily invent new methods or materials but will most often adapt new ideas rather than use them as they were designed. He enjoys doing things in a distinctively different way. He has "modest energy," "fairly steady" work habits and will change if he feels it is for the better. He depends largely on his own judgment rather than that of others.

Image Number 9 – This practitioner enjoys the process of bargaining; "anyone interested in changing his behavior must negotiate for that change." He uses salary payments and work load as his main items for trading. He is very concerned about the amount of his time that would be required for any change attempt.

Image Number 10 – This practitioner is oriented toward rationalistic thinking and procedures. "He has a sense of obligation to change to whatever is proven better than his current practice, but he has learned that not many of the alternatives rest on a factual basis." He has considerable energy and ability to act on something once he is convinced that it is better. He is not extremely competitive, but does want to keep up with that which has been proven worthy.

It can be said that Brickell's images are not mutually exclusive, although they do cover a broad range of ideal types. They also provide enough specificity for generating items that could be used to quantify and determine the existence of images in a sample of the domain of educational practitioners.

In addition to the content of Brickell's paper, conceptions from the following references were also used as input to the process:

1. Four classifications discussed by Schien (Schien, 1965)

2. Barnes' four category typologies (Vroom, Ch. 2, 1967)

3. Sieber's discussion of four images of practitioners (Sieber, 1972)

4. Corwin's conception of Employee-Bureaucratic Orientation and Professional Orientation as represented by scales he has developed to measure those constructs (Corwin, 1970, Appendix A. pp. 363-374)

After the 100 items had been generated, they were reviewed to systematically eliminate as much overlap as possible. First, it was determined that there were five categories of statements to which Brickell referred in his discussion of the ten images. These five categories (refer to the discussion that follows) were used to reorganize the 100 items that had been initially generated so as to better match the content of the items with the ten images. Also, the reorganization of the items in this manner facilitated the process of eliminating content overlap in the items within images as well as between images. A brief description of the categories follows:

1. Professional Orientation Items – This category refers to items concerning the practitioner's opinions and behaviors concerning his profession.

2. Bureaucratic Orientation Items – This category refers to items concerning the practitioner's opinions and behaviors related to the organization (i.e., rules, management, office) in which he is employed.

3. Rationality of Decision-Making Items – This category refers to items concerning how the practitioner arrives at a decision and what motivates him in the process.

4. Internal Motivation Items – This category refers to items about the practitioner's "energy" to take action and operate on his own without external incentives (i.e., money, power, and recognition).

5. Change Orientation Items – These items are statements concerning the practitioner's opinions and behaviors relative to changes or change situations in his environment.

The next step in the process of eliminating overlap was to assume that each of the ten images (refer to previous discussion) had elements of each of the five reorganized categories (stated above). Two or three items were then selected for each of the five categories under each image. To allow for a decision on which item best fit a given image, some items were listed under more than one image (see Appendix C for a listing of the final fifty items under the ten images and five *a priori* constructs).

Some items were more relevant to the Brickell image conceptions than others. Using the following criteria, fifty items were selected from the initial set of items:

1. Five items for each of the ten images was set as an optimal number of items. Five items per image was used because there were ten images and a total of fifty items was suggested by a measurement specialist as optimal for any one scale.

2. The five items under each image were to be mutually exclusive relative to the actual statement. (Note: Content overlap was consciously controlled, but with ten images, the content undoubtedly overlaps somewhat. What can be said is that the statements were written specifically to the image and were as discrete as rationally possible.)

These items were again perused for content or item overlap. Several items were altered or substituted so as to gain maximum discreteness.

After the items had been selected on the basis of content, they were examined for their psychometric properties. With the exception of Guideline 2, the criteria used for examination were the same as those eleven criteria used in the writing of the Innovations Characteristic Questionnaire Items.

The final step in the generation of the items for the questionnaire was to decide on a scaling technique. A Likert-type, five-point scale was used. This scale was deemed to have sufficient precision to allow the respondent to develop a response pattern, and it provides a neutral category for responding ("Uncertain"). Also, the Likert-type scale is an equal appearing interval scale which facilitates the process of the factor analytic techniques used in the analysis. All items were randomized for the final questionnaire.

Appendix G

CORRELATIONS ASSOCIATED WITH THE 1972 DATA

1. Correlations of Client Images with Innovation Dimensions (1972 Data)

Client Images	Student Concern	Resources Required	Organized Resistance	Consumer Rating	Credibility	Implementation	R
Professional Bureaucrat							
r_{xy}=	.12	-.06	.11	.03	.06	.06	.31**
b_{yx}=	.38**	.05	.32**	.16*	.09	.12	
b_{xy}=	.04	-.03	.13	.11	.09	.10	
Adapter Creator							
r_{xy}=	.37**	-.22**	-.13	-.35**	-.05	-.15	.49**
b_{yx}=	.17*	-.18**	-.05	-.30**	.04	-.13*	
b_{xy}=	.36**	-.22**	-.16*	-.38*	-.07	-.18**	
Impoverished Practitioner							
r_{xy}=	-.03	.07	.11	.08	-.02	.02	.20
b_{yx}=	.17	.12	.21**	.15*	-.00	.05	
b_{xy}=	-.04	.08	.08	.05	-.05	-.00	
Economic Bureaucrat							
r_{xy}=	.05	-.17	.05	-.01	-.07	.01	.19
b_{yx}=	.04	-.16*	.06	.00	-.07	.01	
b_{xy}=	.05	-.17*	.05	-.01	-.07	.01	
R=	.37**	.29**	.21*	.38**	.12	.18	

r = Product moment correlation coefficient

$b_{}$ = Standardized regression coefficient

R = Multiple regression coefficient

x = Client images

y = Innovation dimensions

* = Significant at the .05 level

** = Significant at the .01 level

2. Do Practitioners Possess Different Perceptions of Themselves as Innovation Adopters? (1972 Data)

Roles and Locations	N	Multiple Client Images	Correlation for Innovation Dimensions
Roles			
Teacher	80	.43**	.32**
Principal	39	.20**	.27**
Central Administrator	38	.14	.25*
State Supervisors	26	.38**	.21
Teacher Educator	33	.21*	.14
State Board Member	08	.14	.13
State Advisory Council	19	.16	.27**
Total	243		
Location			
Not Affiliated with a School	86	.42**	.34**
Rural	57	.38**	.10
Suburban	52	.16	.17
Urban	48	.17	.26*
Total	243		

* = Significant at the .05 level

** = Significant at the .01 level

3. Are Demographics Useful as Cues for Identifying Client Images and Understanding Differential Perceptions of Innovation Dimensions? (1972 Data)

Demographics	Multiple Correlation for Client Images	Multiple Correlation for Innovation Dimensions
Age	.23*	.22
Sex	.29**	.20
Marital Status		
Single	.09	.10
Married	.16	.09
Divorced	.21*	.15
Other	.13	.18
Birth Order		
First Child	.10	.08
Middle Child	.05	.12
Last Child	.12	.17
Area Raised		
Urban	.17	.13
Suburban	.12	.14
Town	.14	.24*
Rural	.22*	.18
Income Level	.32**	.23*
Educational Level	.33**	.20
Major Area Studies		
Education	.11	.37*
Vocational Education	.23**	.24*
Humanities	.22*	.19
Math & Science	.20*	.22
Professional	.15	.22
Split Major	.12	.13
Professional Travel	.30**	.23*
General Travel	.27**	.20
Years Experience at Present Job	.08	.10
Total Experience in Profession	.27**	.20
Number Job Changes	.23*	.23*
Size Undergrad School	.16	.17
Size Grad School	.07	.22

* = Significant at the .05 level

** = Significant at the .01 level

Appendix H

LIST OF DATA COLLECTION SITES VISITED

Indiana

- Bloomfield Public Schools
- Brownsburg Public Schools
- Cloverdale Public Schools
- East Allen County Schools
- Fort Wayne Public Schools
- Fowler Public Schools
- Hammond Public Schools
- Indianapolis Public Schools
- Lawrence Metropolitan School District
- Owen County Community Schools
- Perry Metropolitan School District
- South Bend Community Schools
- South Henry School Corporation
- Washington Township Public Schools

Massachusetts

- Gateway Regional School District (Huntington, Massachusetts)
- Hadley School District
- Ludlo School District
- Springfield School District

North Carolina

- Alamance County Schools
- Burlington Public Schools
- Columbus County Schools
- Cumberland County Schools
- Durham Public Schools
- Harnett County Schools
- Jones County Schools
- Moore County Schools
- New Hanover County Schools
- Pender County Schools
- Wake County Schools
- Wayne County Schools

Ohio

- Columbus Public Schools